BEFORE THE

INDEPENDENT CITIZENS' OVERSIGHT COMMITTEE
TO THE
CALIFORNIA INSTITUTE FOR REGENERATIVE MEDICINE
ORGANIZED PURSUANT TO THE
CALIFORNIA STEM CELL RESEARCH AND CURES ACT

REGULAR MEETING

LOCATION:	HILTON SFO BAYFRONT HOTEL 600 AIRPORT BOULEVARD BURLINGAME, CALIFORNIA
DATE:	WEDNESDAY, OCTOBER 9, 2013 9 A.M.
REPORTER:	BETH C. DRAIN, CSR CSR. NO. 7152
BRS FILE NO.:	92763

I N D E X

160 S. OLD SPRINGS ROAD, SUITE 270, ANAHEIM, CALIFORNIA 92808
1-800-622-6092 1-714-444-4100 EMAIL: DEPO@DEPO1.COM

I N D E X (CONT'D.)

160 S. OLD SPRINGS ROAD, SUITE 270, ANAHEIM, CALIFORNIA 92808
1-800-622-6092 1-714-444-4100 EMAIL: DEPO@DEPO1.COM

SAN FRANCISCO, CALIFORNIA;

WEDNESDAY, OCTOBER 9, 2013; 9 A.M.

CHAIRMAN THOMAS: ALL MEMBERS OF THE BOARD PLEASE TAKE YOUR SEATS. I'D LIKE TO WELCOME EVERYBODY TO THE OCTOBER 10TH BOARD MEETING OF THE ICOC OR AS SOME OF US PREFER TO REFER TO IT AS TWO DAYS AFTER JUAN URIBE'S MONUMENTAL HOME RUN THAT SENT THE DODGERS INTO THE NLCS. NOT SINCE CURT GIBSON HAS DODGER STADIUM SHOOK SO MUCH AS IT DID AT THAT MOMENT. WE WOULD LIKE TO THANK ALL OF YOU GIANT FANS FOR SENDING JUAN URIBE OUR WAY.

MR. TORRES: AND BRIAN WILSON.

CHAIRMAN THOMAS: WAS THAT BETTINA, THE GIANTS FAN, I JUST HEARD THERE? WHO WAS THAT?

OKAY. SO FIRST ORDER OF BUSINESS HERE IS, MARIA, WILL YOU PLEASE LEAD US IN THE PLEDGE OF ALLEGIANCE.

(THE PLEDGE OF ALLEGIANCE.)

CHAIRMAN THOMAS: MARIA, WILL YOU PLEASE CALL THE ROLL.

MS. BONNEVILLE: LINDA BOXER.

DR. BOXER: HERE.

MS. BONNEVILLE: SUE BRYANT.

DR. BRYANT: HERE.

MS. BONNEVILLE: KEN BURTIS.
DR. BURTIS: HERE.
MS. BONNEVILLE: ANNE-MARIE DULIEGE.
DR. DULIEGE: HERE.
MS. BONNEVILLE: MARCY FEIT. JUDY GASSON.
DR. GASSON: HERE.
MS. BONNEVILLE: MICHAEL GOLDBERG.
MR. GOLDBERG: HERE.
MS. BONNEVILLE: SAM HAWGOOD. STEPHEN JUELSGAARD.
MR. JUELSGAARD: HERE.
MS. BONNEVILLE: TED KRONTIRIS.
DR. KRONTIRIS: HERE.
MS. BONNEVILLE: SHERRY LANSING. BERT LUBIN. MICHAEL MARLETTA. SHLOMO MELMED.
DR. MELMED: HERE.
MS. BONNEVILLE: KIRK PETERSON.
DR. PETERSON: HERE.
MS. BONNEVILLE: FRANCISCO PRIETO. CARMEN PULIAFITO.
DR. PULIAFITO: PRESENT.
MS. BONNEVILLE: ROBERT QUINT. AL ROWLETT.
DR. ROWLETT: HERE.
MS. BONNEVILLE: JOAN SAMUELSON. JEFF

SHEEHY.

MR. SHEEHY: HERE.

MS. BONNEVILLE: OSWALD STEWARD.

DR. STEWARD: HERE.

MS. BONNEVILLE: JONATHAN THOMAS.

CHAIRMAN THOMAS: HERE.

MS. BONNEVILLE: ART TORRES.

MR. TORRES: HERE.

MS. BONNEVILLE: KRISTINA VUORI.

DR. VUORI: HERE.

MS. BONNEVILLE: DIANE WINOKUR.

CHAIRMAN THOMAS: THANK YOU. PROCEED NOW TO THE CHAIRMAN'S REPORT. FIRST OF ALL, WE HAVE TWO NEW MEMBERS IN ATTENDANCE, LINDA BOXER AND JUDY GASSON. WOULD LIKE THEM IN TURN TO PLEASE INTRODUCE THEMSELVES AND SAY A FEW WORDS ABOUT WHAT THEY DO AND WHERE THEY'RE FROM.

DR. BOXER: LINDA BOXER FROM STANFORD. I'M THE ALTERNATE FOR DEAN LLOYD MINOR, SO I'M THE VICE DEAN OF THE SCHOOL OF MEDICINE SINCE SEPTEMBER 1ST, WORKING WITH LLOYD IN HIS FIRST YEAR AS DEAN.

I'M A HEMATOLOGIST, GOT MY M.D., PH.D. AT STANFORD, HAVE BEEN AT STANFORD ESSENTIALLY A LONG TIME, AND THEN THE CHIEF OF HEMATOLOGY FOR ABOUT TEN YEARS NOW. WAS INTERIM CHAIR OF THE DEPARTMENT OF

MEDICINE FOR A COUPLE OF YEARS AND NOW TAKING ON THE ROLE OF VICE DEAN. I STILL PRACTICE AS A HEMATOLOGIST WITH AN INTEREST IN HEMATOLOGY. ALSO I HAVE A LAB THAT FOCUSES ON B CELL MALIGNANCIES.

DR. GASSON: I'M JUDY GASSON FROM UCLA, AND I'M A BASIC SCIENTIST. WHEN I WAS A FULL-TIME RESEARCHER, MY RESEARCH WAS ON NORMAL AND NEOPLASTIC BLOOD CELL PRODUCTION, STEM CELLS. SINCE 1995 I'VE BEEN THE DIRECTOR OF THE CANCER CENTER AND PRESIDENT OF THE CANCER CENTER FOUNDATION. AND FOR THE LAST YEAR I'VE BEEN SENIOR ASSOCIATE DEAN FOR RESEARCH IN THE DAVID GEFFEN SCHOOL OF MEDICINE. AND I'M VERY HAPPY TO BE HERE.

CHAIRMAN THOMAS: THANK YOU AND A VERY PLEASANT WELCOME TO THE TEAM TO BOTH OF YOU. WE'RE DELIGHTED THAT YOU'RE HERE AND PART OF OUR EFFORT.

YES, SENATOR TORRES.

MR. TORRES: AS THOSE INTRODUCTIONS WERE OCCURRING, IT REMINDED ME THAT WE OWE CONGRATULATIONS TO STANFORD AND USC FOR SHARING THE NOBEL PRIZE IN CHEMISTRY TODAY. CONGRATULATIONS.

(APPLAUSE.)

CHAIRMAN THOMAS: THANK YOU, MR. SENATOR.

LIKE JUST TO START BY REFLECTING FURTHER ON OUR LATE COLLEAGUE DUANE ROTH. THROUGHOUT THE

COURSE OF THE PAST COUPLE MONTHS SINCE OUR LAST BOARD MEETING, THE TRIBUTES AND COMMENTS ABOUT DUANE HAVE CONTINUED TO POUR IN. BARELY A DAY GOES BY WHERE I DON'T HEAR SOMEBODY COMING UP TO ME AND SPEAKING ABOUT DUANE, TALKING ABOUT WHAT HE MEANT, HOW IMPORTANT HE WAS TO THE MISSION, AND HOW CENTRAL A FIGURE HE WAS IN THE SAN DIEGO COMMUNITY. AND I WANTED TO LET EVERYBODY KNOW, IN ADDITION TO THE MEASURES THAT WE DISCUSSED AT THE LAST BOARD MEETING AND THINGS WE WOULD PUT IN PLACE IN DUANE'S HONOR, ON DECEMBER 9TH, KRISTINA, THE AUDITORIUM AT THE SANFORD CONSORTIUM FOR REGENERATIVE MEDICINE WILL BE DEDICATED AND NAMED IN DUANE'S HONOR. YOU WILL BE RECEIVING INVITATIONS TO THAT.

SO, DUANE, WE'RE CONTINUING TO THINK OF YOU AND MISS YOU VERY MUCH.

WANTED TO SAY A COUPLE COMMENTS ABOUT SORT OF THESE ARE INTERESTING TIMES FOR THE FIELD OF BIOTECH AND MEDICAL RESEARCH. ON THE ONE HAND, WE'VE BEEN SEEING A DRAMATIC UPSURGE IN INTEREST IN BIOTECH AS REFLECTED BY THE DRAMATIC INCREASE IN IPO'S IN THE AREA IN 2013. SIMILARLY, THERE HAVE BEEN A SIGNIFICANT INCREASE YEAR TO YEAR IN VENTURE CAPITAL THAT'S COMING INTO LIFE SCIENCES AND BIOTECH IN PARTICULAR.

WE'VE HAD, AS YOU KNOW, CALIFORNIA LEADING THE WAY IN THIS. WE HAD A NICE PIECE RECENTLY THAT TALKED ABOUT HOW CALIFORNIA NOW LEADS MASSACHUSETTS IN BIOTECH JOB GROWTH, WHICH WE ARE VERY PROUD OF.

AND WE'VE FREQUENTLY SPOKEN ABOUT HOW, AS BIOTECH CONTINUES IN ITS IMPORTANCE, THAT WE BELIEVE THAT SOMEDAY WE'LL BE THE NEW SILICON VALLEY OF CALIFORNIA. AND INTERESTINGLY ENOUGH, WE HAD SOMETHING HAPPEN LAST COUPLE WEEKS THAT BROUGHT SILICON VALLEY AND BIOTECH TOGETHER, WHICH WAS THE ADVENT OF THE CALIFORNIA LIFE COMPANY OR CALICO, WHICH WAS FUNDED BY GOOGLE VENTURES HEADED BY ART LEVINSON, FORMER COLLEAGUE OF MR. JUELSGAARD, CURRENT CHAIRMAN OF THE BOARD OF GENENTECH AND APPLE. AND AS YOU PROBABLY SAW THE ARTICLES ABOUT THAT, VERY INTERESTING UNDERTAKING WHERE BASICALLY THEIR TASK IS TO FIGURE OUT HOW TO INCREASE LIFE SPAN, OR AS *TIME MAGAZINE* SAID ON ITS COVER, "CAN GOOGLE CHEAT DEATH?" SO YOU HAD AN INTERESTING CONFLUENCE OF SILICON VALLEY AND BIOTECH WITH THAT DEVELOPMENT. SO THERE'S LOTS OF VERY POSITIVE THINGS IN GENERAL GOING ON IN THE AREA.

AGAINST THAT, HOWEVER, THERE'S SOME NEGATIVE THINGS AS WELL. FIRST AND FOREMOST BEING THE SEQUESTER AND WHAT IT'S DOING TO FEDERAL FUNDING

FOR RESEARCH, WHICH IS NOTHING SHORT OF DEVASTATING. PRIOR TO THE LAST WEEK'S DEVELOPMENTS BACK IN WASHINGTON, THERE WAS A LOT OF CONCERN GIVEN THE BUDGET FOR RESEARCH AS IT STOOD AT THAT POINT AND HOW IT WOULD IMPACT MEDICAL RESEARCH. THE *HUFFINGTON POST* RAN A PIECE THAT SAID AS MANY AS 20 PERCENT OF SCIENTISTS FUNDED BY MEDICAL RESEARCH IN THE COUNTRY ARE CONTEMPLATING MOVING OUTSIDE THE UNITED STATES BECAUSE OF THIS LACK OF EMPHASIS THAT CONTINUES TO PLAGUE THE RESEARCH AREA IN WASHINGTON.

THAT'S BROUGHT HOME BY STATS HERE NEAR AND DEAR TO US IN CALIFORNIA. UCSF HAS REPORTED THAT HALF OF THE SCIENTISTS INVOLVED IN MEDICAL RESEARCH ARE EITHER DELAYING OR CANCELING THEIR PROJECTS BASED ON THIS PROBLEM WITH NIH AND THE FEDERAL FUNDING. THIS OBVIOUSLY, WITH THE ADVENT OF THE GOVERNMENT SHUTDOWN THE LAST FEW DAYS, IS ONLY GETTING WORSE SO THAT THE FUTURE IS VERY UNCLEAR. ALL OF WHICH, OF COURSE, REINFORCES THE IMPORTANCE OF WHAT WE DO HERE. WE'RE FORTUNATE TO BE INSULATED FROM ALL OF THE ISSUES PLAGUING THE FEDERAL GOVERNMENT, AND WE HAVE SEEN OUR PRACTICE CONTINUE APACE.

IN THE LAST COUPLE WEEKS, FOR EXAMPLE, WE'VE HAD A COUPLE OF GRANTS WORKING GROUP MEETINGS,

ONE ON DISEASE TEAM III, ONE ON BASIC BIOLOGY V, AND CIRM CONTINUES ALONG IN ITS VERY IMPORTANT MISSION OF ADVANCING REGENERATIVE MEDICINE RESEARCH IN THE FACE OF ALL THE PROBLEMS PLAGUING THE FIELD DUE TO OTHERS NOT BEING ABLE TO PUT THE EMPHASIS THAT WE BELIEVE IS PROPER ON THE FIELD.

SO AS WE SIT HERE TODAY AND GO FORWARD, WE NEED TO FEEL ACTUALLY VERY GOOD ABOUT WHAT WE'RE DOING. WE ARE SORT OF ALONE IN CERTAIN RESPECTS NATIONALLY BECAUSE OF THE PROBLEMS EVERYBODY ELSE IS HAVING. AND WE'RE VERY FORTUNATE, AS WE ALWAYS NOTE, THAT THE VOTERS HAD THE FORESIGHT TO FUND THIS WONDERFUL UNDERTAKING. AND WE CONTINUE ALONG IN THAT REGARD.

SO I THINK THAT THE LAST THING I WANT TO SAY ON THE SUBJECT, AND I DON'T WANT TO SAY TOO MUCH BECAUSE KEVIN IS GOING TO REPORT IN ON THIS, BUT PART AND PARCEL OF WHAT WE'VE BEEN DOING AS WE MARCH ALONG AND OUR WORK CONTINUES TO MORE AND MORE HEAD TOWARDS THE CLINIC, ETC., WE'RE PUTTING EVER MORE EMPHASIS ON GETTING THE WORD OUT ABOUT WHAT WE'RE DOING. YOU'LL HEAR FROM KEVIN ABOUT THE SECOND IN THE SERIES OF PATIENT ADVOCATE MEETINGS, THIS ONE HELD AT USC -- THANK YOU, CARMEN -- AS WELL AS A TREMENDOUS AND EXTREMELY SUCCESSFUL TOWN HALL HELD

LAST WEEK, WHICH, KEVIN, I'M SURE JEFF WILL WANT TO TELL US ALL ABOUT AS HE LED THIS TERRIFIC EFFORT TO EDUCATE THOSE ON PROGRESS MADE IN THE HIV SPACE, WHICH INCLUDED A NUMBER OF CIRM-FUNDED PROJECTS.

SO VERY INTERESTING TIMES. I THINK THAT WE NEED TO KEEP OUR NOSE TO THE GRINDSTONE. YOU WILL HEAR TODAY ABOUT SOME RECOMMENDATIONS, THE FIRST WAVE OF DISCUSSIONS ON PRIORITIZATION OF WHERE WE GO FROM HERE GIVEN THE STATUS OF OUR FUNDING GOING FORWARD. AND I THINK THAT THAT WILL BE A MOST INTERESTING DISCUSSION WHICH WILL BE TEED UP TODAY AND CONTINUED TO THE DECEMBER BOARD MEETING WHERE WE WILL MAKE SOME HARD DECISIONS ON STRATEGIC DIRECTION.

SO WITH THAT, AGAIN, WELCOME EVERYBODY. I'D LIKE TO TURN OVER NOW TO ELLEN TO GIVE THE PRESIDENT'S REPORT. DR. FEIGAL.

DR. FEIGAL: WELL, THANK YOU VERY MUCH AND GOOD MORNING. AND I JUST WANT TO START OUT BY SAYING ALAN TROUNSON IS SORRY HE COULDN'T BE HERE TODAY. HE'S ACTUALLY AT THE HERRENHAUSEN SYMPOSIUM IN GERMANY, WHICH IS A SYMPOSIUM THAT'S FOCUSED ON STEM CELLS AND REGENERATIVE MEDICINE, LOOKING AT THE GAPS AND OPPORTUNITIES TO MOVE THE STEM CELL FIELD FORWARD. SO WE LOOK FORWARD TO HIM COMING BACK TO

REPORT BACK ON HIS LEARNINGS FROM THAT CONFERENCE.

WHAT I'D LIKE TO DO IS SHARE WITH YOU SOME VIGNETTES OF SOME IMPORTANT SCIENCE THAT'S TAKEN PLACE IN THE FIELD LATELY AND HAS BEEN PUBLISHED. THE FIRST ONE THAT I WANT TO TALK ABOUT IS AN ARTICLE THAT WAS PUBLISHED IN *NATURE* ABOUT A MONTH AGO ON IPS CELLS FORMING ORGANOIDS WITH MULTIPLE TYPES OF BRAIN CELLS. AND THIS RESEARCH WAS DONE BY A TEAM THAT'S LED BY DR. KNOBLICH AT THE AUSTRIAN ACADEMY OF SCIENCES IN VIENNA.

AND IT USED AN IPS-TYPE CELL TO PRODUCE BRAIN ORGANOIDS IN THE LAB TO SERVE AS A MODEL FOR NORMAL BRAIN DEVELOPMENT AND USED THE MODEL TO REVEAL A POSSIBLE CAUSE OF THE SMALL BRAIN BIRTH DEFECT KNOWN AS MICROCEPHALY. AS I NOTED, THEY PUBLISHED THE ARTICLE JUST A FEW WEEKS AGO.

THIS TEAM BUILT ON SEVERAL RECENT REPORTS THAT HAVE SHOWN THE STRONG CAPACITY FOR STEM CELLS TO SELF-ORGANIZE INTO MULTIPLE LAYERS OF TISSUES IF THEY ARE GIVEN THE RIGHT ENVIRONMENT. SO THE PEA-SIZED BRAIN TISSUES THAT THEY CREATED AND CALLED CEREBRAL ORGANOIDS ARE THE MOST COMPLEX NEURAL STRUCTURES SO FAR. THEY VERIFIED THE ORGANOIDS CONTAIN SEVERAL TYPES OF BRAIN CELLS, AND THE DIFFERENT TYPES OF CELLS SEEM TO INTERACT, ALTHOUGH

THE ORGANIZATION OF THE VARIOUS CELLS DID NOT MATCH THE HUMAN BRAIN. THEY ALSO DID NOT FORM BLOOD VESSELS WHICH PROBABLY ACCOUNTS FOR THE LIMITED SIZE OF THE ORGANOIDS.

ONE KEY TO THE RESEARCH PROTOCOL, AS WITH MOST OF THE GROUPS WHO ARE BUILDING MORE COMPLEX TISSUES, WAS TO GROW THE CELLS IN A THREE-DIMENSIONAL CULTURE. THEY USED A GEL THAT SOMEWHAT MIMICKED THE CONNECTIVE TISSUE THAT WOULD BE FOUND IN THE DEVELOPING BRAIN, AND THE CELLS FORMED THE INITIAL ORGANOIDS VERY QUICKLY, WITHIN EIGHT TO TEN DAYS, AND WENT ON TO DEVELOP DISTINCT NERVE TISSUES WITHIN 20 TO 30 DAYS. AND ALTHOUGH THEIR SIZE WAS LIMITED, THEY LOOK LIKE THEY CAN SURVIVE INDEFINITELY, CURRENTLY UP TO ABOUT TEN MONTHS.

SO THIS IS REALLY JUST TO GIVE YOU A TASTE THAT THE RESEARCH HAS CREATED A VERY ELEGANT MODEL FOR STUDYING BRAIN DEVELOPMENT AS WELL AS TRYING TO UNDERSTAND ERRORS IN BRAIN DEVELOPMENT.

THE NEXT VERY INTERESTING RESEARCH PIECE WAS AN ARTICLE FROM MICHAEL CLARK FROM STANFORD THAT WAS PUBLISHED IN *NATURE* ABOUT A MONTH AGO LOOKING AT A STEM CELL DEFECT THAT'S LINKED TO DOWN'S SYNDROME AND IN SOME POINTS TO POTENTIAL THERAPY. THIS TEAM

WAS PARTIALLY FUNDED BY CIRM. IT WAS LED BY MICHAEL CLARK AT STANFORD.

AND HE FOUND A GENE THAT LEADS TO DEFECTS IN STEM CELLS THAT COULD ACCOUNT FOR SOME OR IS THOUGHT TO ACCOUNT FOR SOME OF THE PREMATURE AGING AND OTHER SYMPTOMS SEEN IN DOWN'S SYNDROME.

AND CLARK'S TEAM DIDN'T REALLY SET OUT TO STUDY THE DOWN'S SYNDROME LINK. THEY WERE ACTUALLY CONDUCTING THEIR USUAL LINE OF STUDY RELATED TO CANCER. AND SPECIFICALLY THEY WERE LOOKING AT THE GENETIC REGULATION OF GROWTH AND SELF-RENEWAL IN NORMAL STEM CELLS AND IN CANCER STEM CELLS. AND THEY FOUND A GENE THAT SEEMED TO PLAY A ROLE. IT'S CALLED USP-16. AND IT WAS ON CHROMOSOME 21, THE CHROMOSOME THAT HAS AN ABNORMAL THIRD COPY IN PEOPLE WITH DOWN'S SYNDROME.

SO WITH ANOTHER GROUP ON CAMPUS THAT HAS MOUSE MODELS OF DOWN'S SYNDROME, INCLUDING ONE THAT HAD THREE COPIES OF THE USP-16 GENE, THEY TOOK CELLS FROM THE BRAINS OF THESE YOUNG MICE AND LOOKED AT THE ABILITY OF THE INTERMEDIATE NEUROPROGENITOR STEM CELLS TO GROW. IN CULTURE THESE CELLS FROM NORMAL MICE WILL FORM CLUMPS CALLED NEUROSPHERES, BUT ONLY ONE OUT OF ABOUT A THOUSAND OF THE CELLS WITH THE EXTRA USP-16 GENE WERE ABLE TO MATURE LIKE THIS.

AND BY CONTRAST, ONE OF ABOUT 21 ABNORMAL BRAIN CELLS DID SO.

SO TO FURTHER VERIFY THE ROLE OF THE EXTRA COPY OF THE GENE, THE GROUP BRED MICE IN WHICH THE GENE WAS NOT ACTIVE ON ONE OF THE THREE COPIES OF THE CHROMOSOME. AND IN BRAIN CELLS FROM THOSE MICE THE ABILITY OF THE PROGENITOR STEM CELLS TO GROW RETURNED TO NORMAL. AND THIS DEFECT APPEARS TO AFFECT STEM CELLS THROUGHOUT THE BODY. SO THEY ALSO LOOKED AT THE HYPOTHESIS IN HUMAN SKIN CELLS, AND THEY FOUND THAT IN NORMAL HUMAN TISSUE, WHEN THE CELLS ARE MANIPULATED SO THAT AN EXTRA COPY OF THIS GENE IS TURNED ON, THE CELLS DON'T PROLIFERATE NORMALLY.

SO THIS IS REALLY JUST SOME VERY INTRIGUING RESEARCH TO SUGGEST THAT THERE MIGHT BE A WAY TO REDUCE THE LEVEL OF THE PROTEIN CODED BY USP-16 IN PEOPLE WITH DOWN'S SYNDROME AS A POTENTIAL WAY OR APPROACH TO AMELIORATE AT LEAST SOME OF THE SYMPTOMS OF THE CONDITION.

THE THIRD STUDY THAT I WANTED TO TELL YOU ABOUT IS REALLY A STUDY THAT WAS DONE BY KEN CHIEN AT HARVARD AND REPORTED IN *NATURE BIOTECH* ALSO LAST MONTH. HIS COLLEAGUES AND ALSO COLLEAGUES AT THE KAROLINSKA IN SWEDEN USED GENETIC MANIPULATION TO

GET NATIVE HEART STEM CELLS TO PRODUCE HEALTHY NEW BLOOD VESSELS AT THE SITE OF AN INDUCED HEART ATTACK IN MICE.

THEY TARGETED A PROTEIN CALLED VEG-F THAT HAD PRODUCED MODEST OR VERY POOR RESULTS IN THE PAST. VEG-F IS JUST AN ABBREVIATION FOR VASCULAR ENDOTHELIAL GROWTH FACTOR. AND IT WOULD SEEM TO BE A LOGICAL CHOICE IF YOU WANT TO CREATE NEW BLOOD VESSELS TO GROW INTO HEART MUSCLE RATHER THAN SCAR TISSUE. BUT WHEN THIS PROTEIN WAS INJECTED DIRECTLY, IT DID NOT SEEM TO SURVIVE LONG ENOUGH TO DO MUCH GOOD. AND WHEN THE DNA FOR THE GENE WAS INSERTED, IT SEEMED TO OVEREXPRESS AND RESULT IN TOO MANY VESSELS THAT WERE LEAKY AND CAUSED EDEMA.

SO CHIEN AND HIS TEAM DECIDED TO USE A SYNTHETIC FORM OF RNA, THE INTERMEDIATE GENETIC MATERIAL THAT CARRIES THE CODE FOR THE PROTEIN, INTO THE PART OF THE CELL WHERE THE PROTEIN COULD BE ASSEMBLED. AND THE ADVANTAGE OF THE RNA CONSTRUCT WAS THAT THE SIGNAL TO PRODUCE THE PROTEIN COULD BE PULSED, AND IT RESULTED IN SHORT BURSTS OF EXPRESSION. SO THAT IN MICE THAT HAD AN INDUCED HEART ATTACK, THE TREATMENT ACTUALLY REDUCED THE INFARCT SIZE AND IMPROVED SURVIVAL.

THE LAST REALLY RESEARCH FINDING THAT I

WANT TO REPORT TO YOU WAS WORK THAT WAS DONE BY HANS CLEVERS AT THE HUBRECHT INSTITUTE IN THE NETHERLANDS. AND THIS IS WORK THAT ACTUALLY BUILT ON THEIR PRIOR WORK TO CREATE COMPLEX TISSUES TO ISOLATE PROGENITOR STAGE STEM CELLS IN THE PANCREAS THAT ARE ABLE TO FORM TWO KEY ISSUES OF THE ORGAN, BETA CELLS AND DUCT CELLS. AND THEY USED MOUSE CELLS AND PUBLISHED THEIR WORK IN EMBO LAST MONTH.

HIS PRIOR WORK HAD ELUCIDATED AND USED AN INTERPLAY IN THE CELL'S INTERNAL SIGNALING. IT'S KNOWN THAT VERY SPECIFIC SIGNALS ARE NECESSARY TO ACTIVATE THE ADULT STEM CELLS. IN PROLIFERATING ADULT STEM CELLS, THE GENE KNOWN AS WNT IS TURNED ON, AND THE CELL SURFACE HAS A RECEPTOR FOR PROTEINS THAT PROMOTE WNT CALLED R-SPONDINS. AND PREVIOUSLY HE HAD GROWN INTESTINAL STEM CELLS IN THREE-DIMENSIONAL CULTURES ALONG WITH THIS R-SPONDIN AND CREATED VERY COMPLEX INTESTINAL TISSUE.

BUT THE PANCREAS IN NORMAL SITUATIONS DOES NOT HAVE CELLS WITH ACTIVE WNT OR THE R-SPONDIN RECEPTOR. SO IT HAS BEEN VERY HARD TO ISOLATE PANCREATIC PROGENITOR STEM CELLS THAT CAN BE EXPANDED IN THE LAB.

NOW HIS TEAM HAS SHOWN THAT IF YOU INJURE THE DUCT OF THE PANCREAS, YOU INDUCE THIS RECEPTOR

AND IN TURN WNT AND THAT YOU CAN ALSO INDUCE THE RECEPTOR BY BREAKING UP THE DUCT TISSUE AND GROWING IT IN THE LAB IN CULTURES RICH IN R-SPONDIN.

SO THESE ARE JUST SOME EXAMPLES OF SOME VERY INTERESTING WORK THAT'S BEEN GOING ON THAT HAVE RELEVANCE TO THE STEM CELL FIELD, SOME OF WHICH WAS PARTIALLY FUNDED BY CIRM, BUT THINGS THAT I THINK WOULD BE OF INTEREST TO YOU IN REALLY TRYING TO ADVANCE THE FIELD IN MOVING FORWARD.

WHAT I'D NOW LIKE TO DO IS REALLY GO THROUGH SOME OF OUR SCIENTIFIC PROGRAMS AND GIVE YOU SORT OF A LIST OF THE CALENDAR OF EVENTS OF WHAT TO EXPECT IN THE NEXT SIX MONTHS OR SO.

THE FIRST ONE THAT I WANT TO MENTION IS THE DISEASE TEAM III. THIS GROUP OF DISEASE TEAM AWARDS WAS ACTUALLY ALSO NAMED IN HONOR OF DUANE ROTH. AND JUST FOR THOSE OF YOU WHO ARE NEW MEMBERS, HE WAS A BOARD MEMBER THAT WAS VERY WELL KNOWN IN THE SAN DIEGO COMMUNITY AND ALSO WAS JUST A REAL MOVER AND SHAKER FOR HAVING US DEVELOP THESE DISEASE TEAM PROGRAMS. AND WE THOUGHT IT WOULD BE SOMETHING HE WOULD HAVE APPRECIATED TO HONOR HIM IN THIS WAY BY NAMING THE AWARD AFTER HIM.

THESE DISEASE TEAM AWARDS, WE'RE GOING THROUGH, WE'VE ALREADY HAD THE REVIEW, WE'RE PLOWING

THROUGH THE DIFFERENT SUMMARIES. WE'LL BE TAKING THIS TO THE BOARD IN DECEMBER OF THIS YEAR.

THE NEXT GROUP OF BIG INITIATIVES IS REALLY THE FIFTH ITERATION OF OUR BASIC BIOLOGY. AND IN THIS THE ICOC FUNDING DECISION IS PLANNED FOR JANUARY, SO EARLY NEXT YEAR.

THE GENOMICS INITIATIVE, WHICH WAS REALLY TO ADVANCE THAT INTERFACE BETWEEN GENOMICS AND STEM CELL BIOLOGY, IS GOING TO BE REVIEWED IN NOVEMBER, AND THEN THE RECOMMENDATIONS FROM THAT REVIEW WILL BE BROUGHT BACK TO THIS BOARD SOMETIME IN THE NEXT SEVERAL MONTHS.

AND THE STRATEGIC PARTNERSHIP III IS GOING THROUGH REVIEW -- WILL GO THROUGH REVIEW IN FEBRUARY OF 2014.

RESEARCH LEADERSHIP, AN EXTENSION OF THOSE AWARDS FOR CAREER DEVELOPMENT AND REALLY GETTING SOME OF THE RAINMAKERS INTO THE FIELD AND HELP EXPAND AND POPULATE THE FIELD OF STEM CELL RESEARCH, IS GOING TO BE REVIEWED IN MARCH OF 2014.

I ALSO WANT TO ACKNOWLEDGE THE SCIENCE OFFICERS WHO ARE WORKING ON THESE DIFFERENT INITIATIVES. FOR DISEASE TEAM III IT'S BEEN DRS. BETTINA STEFFEN AND KEVIN WHITTLESEA, WHO HAVE BEEN REALLY LEADING THE CHARGE IN MAKING THIS GO

FORWARD.

FOR BASIC BIOLOGY V IT'S BEEN DR. KELLY SHEPHERD. FOR THE GENOMICS IT'S DR. MICHAEL YAFFE. FOR THE STRATEGIC PARTNERSHIP IT'S BEEN DR. INGRID CARAS, WHO'S BEEN LEADING IT, WITH A GREAT DEAL OF SUPPORT FROM DR. KATHERINE PRIEST. AND FOR THE RESEARCH LEADERSHIP EXTENSION, IT'S BEEN DR. MICHAEL YAFFE.

THE OTHER INITIATIVES THAT ARE GOING THROUGH ARE THE TOOLS AND TECHNOLOGIES, THE THIRD ITERATION. THIS IS BEING MOVED ALONG BY SCIENCE OFFICER DR. LILA COLLINS, AND WE PLAN ON POSTING THAT RFA THIS MONTH. AND THE ALPHA CLINICS, WHICH IS BEING WORKED BY THE MEDICAL AND SCIENCE OFFICERS DR. MARIA MILLAN AND DR. NATALIE DEWITT, IS BEING FINALIZED FOR RFA POSTING ALSO LATER THIS MONTH.

WE'VE BEEN BUSY WITH OUR PUBLIC OUTREACH AND ENGAGEMENT. I KNOW THAT JONATHAN THOMAS, OUR CHAIR, HAS MENTIONED THAT. AND IT SOUNDS LIKE KEVIN MCCORMACK MIGHT GO INTO MORE DETAIL ABOUT IT AS WELL. BUT I DO WANT TO MENTION SOME OF JUST THE KEY POINTS WHICH MIGHT BE ELABORATED ON LATER. AS I THINK YOU ALL KNOW, OCTOBER 2D WAS STEM CELL AWARENESS DAY. WE HAD 20 EVENTS IN FOUR COUNTRIES AND FOUR U.S. STATES. WE REACHED MORE THAN 4500

HIGH SCHOOL STUDENTS IN CALIFORNIA.

WE ALSO HAD A PATIENT ADVOCATE DAY IN LOS ANGELES, AND CHAIRMAN THOMAS WAS REALLY ONE OF THE FEATURED MEMBERS OF THAT PATIENT ADVOCATE DAY. PEOPLE COULD COME AND JOIN IN A ROUNDTABLE DISCUSSION. IT'S MY UNDERSTANDING, I WASN'T ABLE TO BE THERE, BUT IT'S MY UNDERSTANDING FROM THE PEOPLE THAT DID ATTEND THAT IT WAS A VERY CONSTRUCTIVE, VERY INTERACTIVE EVENT AND WILL REALLY CONTINUE IN SUBSEQUENT ITERATIONS IN OTHER CITIES.

I ALSO WANT TO MENTION WE HELD A PUBLIC TOWN HALL ON HIV CURE RESEARCH. HERE YOU SEE THE PHOTOS OF THE DIFFERENT SCIENTISTS THAT PARTICIPATED IN THE PANEL. AND I'LL GO THROUGH THEIR NAMES. BUT NOT TO BE FORGOTTEN, THE CIRM FAMILY WHO ALSO ACTIVELY PARTICIPATED IN ORCHESTRATING, COORDINATING, AND PARTICIPATING IN THE EVENT, JEFF SHEEHY INTRODUCED THE WHOLE DAY OR THE WHOLE SEMINAR ACTUALLY, IT WAS LATER EVENING THAT DAY, AND REALLY PROVIDED HIS PERSPECTIVES AND INSIGHTS FROM THE HIV COMMUNITY AND HIS WORK IN THIS AREA. ALAN TROUNSON ALSO JOINED THE PANEL, AND THEN OUR OWN MEDICAL OFFICER MARIA MILLAN VERY SKILLFULLY MODERATED THIS VERY ENGAGING SET OF INTERACTIONS.

THE PHOTOS OF THE DIFFERENT PEOPLE THAT

JOINED ON THE PANEL WERE FROM ALL OVER THE COUNTRY. THEY INCLUDED STEVE DEEKS AND MIKE MCCUNE FROM UC SAN FRANCISCO, WARNER GREENE FROM THE GLADSTONE, HANS-PETER KIEM FROM THE FRED HUTCHISON IN SEATTLE, AND LOUIS BRETON FROM CAL-IMMUNE, WHICH HAS THE CLINICAL TRIAL IN HIV THAT CIRM IS FUNDING.

IN ADDITION, CIRM HAS BEEN TRYING TO PUT TOGETHER MORE MINI SYMPOSIA. IT TAKES QUITE A WHILE TO ORGANIZE A LOT OF THE VERY MAJOR CONFERENCES, MAKE SURE ALL THE DIFFERENT SCHEDULES LINED UP. ONE OF THE THINGS WE'RE EXPERIMENTING WITH TO GET MORE EXTERNAL INPUTS ON WAYS THAT WE SHAPE OUR SCIENCE IS REALLY PUTTING TOGETHER MINI SYMPOSIA. ONE OF THE FIRST ONES WE HELD WAS IN AUGUST, AND IT WAS CALLED "BREAKING THE BOTTLENECK," LOOKING AT THE WAY TO DERIVE DEFINITIVE HEMATOPOIETIC STEM CELL LINEAGES FROM HUMAN PLURIPOTENT STEM CELLS. SO IT'S BEEN A VERY, I GUESS, WHAT YOU MIGHT CALL THE HOLY GRAIL IS TO TRY AND FIGURE OUT HOW TO DEVELOP THIS PLURIPOTENT HEMATOPOIETIC STEM CELL THAT COULD GO TO ALL THE DIFFERENT LINEAGES FROM HUMAN PLURIPOTENT STEM CELLS.

THE GOAL OF THIS WORKSHOP WAS REALLY TO DEFINE AND DISCUSS SOME OF THE KEY SCIENTIFIC AND TECHNICAL BOTTLENECKS THAT PREVENT SUCCESSFUL

DERIVATION OF THESE FULLY FUNCTIONAL HSC LINEAGES FROM PLURIPOTENT STEM CELLS AND HOW CIRM MIGHT ACT TO ADDRESS THESE CHALLENGES. THIS COULD HAVE IMPACTS NOT ONLY ON BASIC AND DEVELOPMENTAL BIOLOGY, BUT ALSO ON TRANSLATION OF STEM CELL SCIENCE FROM THE BENCH TO THE BEDSIDE FOR MANY HEMATOLOGIC AND NONHEMATOLOGICAL DISEASES, INCLUDING IMPORTANT ERRORS IN METABOLISM AND GENETIC DISEASES.

THERE WERE PRESENTATIONS FROM SIX EXTERNAL THOUGHT LEADERS, INCLUDING FOUR CIRM INVESTIGATORS, AND THEN THERE WAS A VERY CONSTRUCTIVE AND PRODUCTIVE INTERACTIVE PANEL DISCUSSION.

THE PLAN IS TO REALLY TRY AND CAPTURE THE HIGHLIGHTS OF THIS, TO DISSEMINATE THE RESULTS IN A WHITE PAPER, AND TO THINK OF WAYS THAT THERE MIGHT BE ACTUAL ITEMS IN TERMS OF CONSIDERING SHAPING THIS AS ONE OF OUR PRIORITIES IN AN UPCOMING RFA AND A VARIETY OF OTHER WAYS TO PROMOTE INNOVATIVE COLLABORATIONS IN THIS AREA.

ANOTHER WAY THAT CIRM REALLY WORKS TO TRY AND HELP OVERCOME THE CHALLENGES AND SOME OF THE GAPS AND OBSTACLES IN MOVING STEM CELL SCIENCE FORWARD IS DEALING WITH REGULATORY AGENCIES. THERE'S A GREAT DEGREE OF REGULATORY UNCERTAINTY WITH PIONEERING, INNOVATIVE THERAPIES. NOT ONLY ARE

THERE SCIENTIFIC AND TECHNICAL CHALLENGE, BUT THEN THERE'S THE CHALLENGES OF EVEN JUST TRYING TO NAVIGATE A REGULATORY PATHWAY.

SO IN SEPTEMBER THIS YEAR I WORKED WITH A VARIETY OF ORGANIZATIONS, THE ALLIANCE FOR REGENERATIVE MEDICINE, THE CATAPULT CELL THERAPY FROM THE UK, THE CANADIAN CENTER FOR COMMERCIALIZATION, AND THE ECONOMIC AND SCIENCE RESEARCH COUNCIL OF THE UK, AND THE MEDICAL RESEARCH COUNCIL, ONE OF THE MAJOR FUNDING AGENCIES OF THE MRC, TO PUT TOGETHER A CONFERENCE IN WASHINGTON, D.C. ON REGULATORY PATHWAYS. SO IT WAS AN INTERNATIONAL WORKSHOP FOCUSED ON CELL THERAPIES. IT WAS BEFORE THE SHUTDOWN, SO WE JUST SNEAKED IT IN.

BASICALLY IT WAS AN INTERNATIONAL WORKSHOP WITH A FOCUS ON NORTH AMERICAN, EUROPEAN, AND JAPANESE REGULATORY FRAMEWORKS FOR DEVELOPING CELL-BASED THERAPIES. IT'S A MAJOR ISSUE BECAUSE A LOT OF COMPANIES ARE WORKING ON GLOBAL STRATEGIES. AND IT'S VERY COMPLICATED WHEN THERE'S DIFFERENT REGULATIONS, GUIDELINES IN DIFFERENT COUNTRIES. SO PART OF IT WAS REALLY TRYING TO GET OUR ARMS AROUND OR AT LEAST TRYING TO GET SOME MEASURE OF CONVERGENCE, IF NOT HARMONIZATION, ON THE CELL

PATHWAYS. AND IT WAS VERY INTERACTIVE.

WE'RE PLOWING THROUGH THE DIFFERENT THINGS THAT WE HEARD FROM THE CONFERENCE. IT WENT FROM EVERYTHING FROM CELL SOURCE AND MANUFACTURING TO PRECLINICAL ANIMAL MODELS TO CLINICAL DESIGN ISSUES, AND HOW DO YOU CHOOSE THE PATIENT POPULATION AND THE BENEFIT RISK RATIO, TO APPROVAL PATHWAYS, AND ARE THERE SOME CREATIVE AND NOVEL WAYS WITHIN THE REGULATORY FRAMEWORK TO MOVE THIS FIELD FORWARD IN A MORE EXPEDITED AND ACCELERATED WAY.

WE ALSO WORK WITH FDA IN EDUCATIONAL WEBINARS AND DEVELOPING THINKING ABOUT PATHWAYS FOR CELL THERAPY. WE HAVE PLANNED A CIRM WEBINAR ON MOVING CELL-BASED THERAPIES TO THE CLINIC FOR PARKINSON'S DISEASE. THIS IS GOING TO TAKE PLACE ON NOVEMBER 14TH. YOU'RE ALL WELCOME TO JOIN. IN GENERAL, WE HAVE ANYWHERE FROM 200 TO 400 PEOPLE JOIN THESE WEBINARS. WE HAVE SPEAKERS FROM THE FDA, ACADEMIA, AND INDUSTRY. OUR SPEAKERS FOR THIS UPCOMING PARKINSON'S DISEASE SEMINAR WILL BE WILSON BRYAN, WHO HEADS UP CLINICAL EVALUATION IN PHARM TOX AT THE FDA, JEFF KORDOWER, WHO'S PROFESSOR OF NEUROLOGIC SCIENCES AND NEUROLOGY AT RUSH UNIVERSITY MEDICAL CENTER, AND KARL JOHE, WHO'S CHIEF SCIENTIFIC OFFICER FOR NEURAL STEM.

THESE ARE PEOPLE WHO ARE VERY KNOWLEDGEABLE ABOUT WHAT'S GOING ON PRECLINICALLY. THEY'RE ALSO VERY KNOWLEDGEABLE ABOUT WHAT'S BEEN TRIED IN THE PAST IN TERMS OF FETAL CELL TRANSPLANTS AND WHAT WE LEARNED FROM THEM. AND IN ADDITION, ROSA CANET-AVILAS HAS BEEN WORKING ON A WHITE PAPER FROM A CIRM-SPONSORED WORKSHOP THAT WE HELD EARLIER THIS YEAR. AND THE PLAN IS TO HAVE THIS IN TIME IN ADVANCE OF THE WORKSHOP SO THAT IT CAN SERVE AS A REFERENCE.

ON THE BUSINESS DEVELOPMENT END, I KNOW THAT ELONA BAUM, NEIL LITTMAN, IN CONJUNCTION WITH BEN HUANG HAVE BEEN VERY ACTIVE IN WORKING ON ENGAGEMENT WITH INDUSTRY AND HOW TO WORK WITH THE COMMERCIAL SECTOR IN WORKING WITH ACADEMIC INVESTIGATORS WORKING WITH CIRM TO MOVE THE STEM CELL SCIENCE FORWARD. SO ON OCTOBER 14TH AND 16TH THERE'S STEM CELL MEETING ON THE MESA. THIS IS ONE OF THE MAJOR PARTNERING FORUMS BETWEEN ACADEMIC AND COMPANIES. WE'LL HAVE REPRESENTATIVES FROM REGENERATIVE MEDICINE COMPANIES, THE PHARMA, AND INVESTMENT COMMUNITY. AND THERE WILL BE A VARIETY OF INVESTIGATORS FROM OUR CIRM-FUNDED PROGRAMS.

ALSO DIFFERENT OF OUR DISEASE TEAMS AND DEVELOPMENT TEAMS PARTICIPATED IN WHAT'S CALLED A

PITCH PRACTICE WITH, I GUESS, VOLUNTEER VENTURE CAPITALISTS PROVIDING INPUT TO TRY AND PREP THEM FOR HOW TO GET YOUR MESSAGE ACROSS IN A CONCISE, CLEAR, AND CRISP WAY.

THERE'S A ROUNDTABLE MEETING ON OCTOBER 16TH AS A FOLLOW-UP TO A JUNE WORKSHOP THAT CIRM HELD ON TECHNOLOGY HURDLES. AND TOPICS TO INCLUDE WILL BE ABOUT BUILDING A STEM CELL TOOL KIT AND ALSO ABOUT SUSPENSION CULTURE FOR INCREASING TITER. SO SOME OF THIS IS REALLY ALSO ABOUT WORKING WITH COMPANIES WHO WORK ON TOOLS AND TECHNOLOGIES. SO IT'S NOT JUST THERAPEUTIC COMPANIES THAT WE'RE WORKING WITH, BUT THOSE THAT CAN ACTUALLY HELP ADVANCE THE FIELD BY WORKING ON SOME OF THE BOTTLENECKS IN THE FIELD.

A CONFERENCE THAT'S UPCOMING THAT I DON'T HAVE ON THE SLIDE, BUT I JUST WANT TO MENTION, IS THAT CIRM IS WORKING ON AN ORGANIZING COMMITTEE WITH THE INSTITUTE OF MEDICINE, THE NATIONAL ACADEMY OF SCIENCES, AND THE ISSCR -- I SERVE ON THAT COMMITTEE ON BEHALF OF CIRM -- TO WORK ON A STEM CELL WORKSHOP IN WASHINGTON, D.C. ON NOVEMBER 18TH. THERE'S GOING TO BE -- AMONG THE TOPICS THAT ARE GOING TO BE ADDRESSED ARE ADDRESSING THE CONCERNS ABOUT UNPROVEN STEM CELL TREATMENTS THAT ARE BEING

OFFERED BY VARIOUS CLINICS THROUGHOUT THE WORLD AND WILL EXAMINE THE EXTENT OF HOW MUCH THESE UNSUBSTANTIATED STEM CELL OFFERINGS ARE GOING ON, THE RISKS THAT THEY MAY POSE TO INDIVIDUAL HEALTH IN THE STEM CELL FIELD, AND TALK ABOUT THE EVIDENCE BASE THAT'S REALLY NEEDED TO SUBSTANTIATE THE CLINICAL APPLICATION OF STEM CELL.

THERE WILL ALSO BE DISCUSSIONS ON THE TECHNOLOGY, ON LEGAL ISSUES FOR ESTABLISHING STANDARDS AND CRITERIA TO GOVERN STEM CELL TRIALS AND TREATMENT. AND THERE WILL BE STAKEHOLDERS FROM RESEARCHERS, FROM LEADERS FROM GOVERNMENT AGENCIES, FROM ACADEMIC INSTITUTIONS, INDUSTRY, AS WELL AS PATIENTS TO GET ALL THE DIFFERENT PERSPECTIVES IN THE ROOM. THAT'S GOING TO BE HELD NOVEMBER 18TH.

AND NOW WHAT I'D LIKE TO DO IS TURN IT OVER TO CHILA TO GIVE AN UPDATE ON THE FINANCIAL REPORT.

MS. SILVA-MARTIN: THANK YOU, DR. FEIGAL. GOOD MORNING. THIS MORNING I'M GOING TO PROVIDE YOU WITH A BRIEF FINANCIAL UPDATE. THIS FIRST SLIDE PROVIDES YOU HIGHLIGHTS ON OUR CURRENT OPERATIONS. THE FIRST BULLET REFLECTS OUR OPERATING EXPENDITURES FOR THE FIRST TWO MONTHS OF THE FISCAL YEAR, WHAT'S BEEN RECORDED IN THE FINANCIAL STATEMENTS. AS YOU

CAN SEE, IT'S ABOUT $2 MILLION, NOT MUCH DIFFERENT FROM WHAT WE RECORDED DURING THE SAME PERIOD LAST FISCAL YEAR.

I DO WANT TO POINT OUT WITH RESPECT TO OUR OPERATIONAL EXPENDITURES IS THAT WE DO EXPERIENCE A LAG, PARTICULARLY AT THE BEGINNING OF THE FISCAL YEAR, BECAUSE OUR ACCOUNTING STAFF ARE BUSY WORKING ON THE YEAR-END PROCESS FOR THE FIRST TWO MONTHS OF THE FISCAL YEAR. AND RIGHT AFTER THEY CONCLUDE THAT, THEY GO RIGHT INTO THE FINANCIAL AUDIT, RESPONDING TO QUESTIONS AND INQUIRIES FROM THE AUDITORS.

OUR GRANT DISBURSEMENTS FOR THE FIRST QUARTER OF THIS FISCAL YEAR WERE AT 59.3 MILLION, ABOUT $20 MILLION MORE THAN WE DISBURSED IN THE PRIOR PERIOD.

THIS NEXT SLIDE REALLY PROVIDES YOU OUR OPERATING EXPENDITURES IN A LITTLE BIT MORE DETAIL. I'M NOT REALLY GOING TO COVER IT OTHER THAN TO SAY THAT IT JUST REFLECTS THE FIRST TWO MONTHS. AGAIN, WE HAVE LAGS IN THE RECORDING OF THE EXPENDITURES.

ONE THING I DID WANT TO POINT OUT IS THAT YOU CAN SEE OUR EXTERNAL SERVICES HAVE GONE DOWN SIGNIFICANTLY, AND THAT WAS BECAUSE WE COMMITTED TO REDUCING THOSE COSTS AND WE DID MOVE SOME OF THOSE

COSTS FROM CONSULTING WORK TO POSITIONS.

I DID WANT TO REPORT THAT WE HAVE COMPLETED THE AUDIT. WE HAVE AN ANNUAL AUDIT EVERY YEAR, AND WHAT THEY DO IS THEY COME IN AND REVIEW OUR INTERNAL CONTROLS. AND THEY FOUND THAT THERE WAS NO DEFICIENCIES IN THIS AREA. THEY ALSO TEST COMPLIANCE WITH RULES, LAWS, REGULATIONS, POLICIES. AND, AGAIN, THEY FOUND NO INSTANCES OF NONCOMPLIANCE.

I DO ANTICIPATE THAT THE MGO, MACIAS, GINI & O'CONNELL, WILL COME TO THE DECEMBER BOARD MEETING AND PROVIDE YOU WITH A FULL REPORT AT THAT TIME.

WE CONTINUE TO RECEIVE FUNDING ON A MONTHLY BASIS THROUGH COMMERCIAL PAPER. AND SO AS A RESULT, WE HAVE A VERY HEALTHY CASH BALANCE TO MEET OUR OPERATIONAL NEEDS OF $61.4 MILLION.

AND THEN THE LAST SLIDE, THE LAST THING I WANTED TO COVER WAS DONATIONS. WE DID RECEIVE A $1,000 DONATION FROM THE AMALGAMATED TRANSIT UNION LOCAL 1277 LOCATED IN LOS ANGELES.

THAT CONCLUDES THE FINANCIAL REPORT. ARE THERE ANY QUESTIONS? THANK YOU.

MR. TORRES: THE UNION PRESIDENT IS A DEAR FRIEND, AND IT WAS TOTALLY UNEXPECTED, BUT THANK YOU AGAIN, MR. LINDSAY.

CHAIRMAN THOMAS: THANK YOU, ELLEN AND CHILA. AND, CHILA, CONGRATULATIONS ON ANOTHER PERFECT AUDIT. WE ALWAYS LOVE HEARING THAT AND APPRECIATE ALL OF YOUR HARD WORK AND ALL OF THOSE WHO HELP YOU GET US INTO THAT POSITION. SO THANK YOU VERY MUCH.

I APPARENTLY THRUST AN AGENDA TOPIC ON KEVIN THAT DOESN'T EXIST. AND SO WHAT I'D LIKE TO DO, SINCE I WOULD BE REMISS IF WE DIDN'T, IS GIVE JEFF A CHANCE TO COMMENT ON THE TOWN HALL OF LAST WEEK FROM HIS PERSPECTIVE AND HOW IT WENT. SO MR. SHEEHY.

MR. SHEEHY: THANK YOU, J.T. WELL, FIRST OF ALL, I JUST REALLY WANT TO ACKNOWLEDGE THE WORK OF KEVIN AND CIRM COMMUNICATIONS STAFF AND MARIA MILLAN. IT WAS A PHENOMENAL EFFORT THAT THEY PUT FORTH TO ORGANIZE THIS FORUM. AND I THINK IT WAS IMPORTANT FOR US TO DO SOMETHING LIKE THIS.

THIS IS ONE OUR FIRST CLINICAL TRIALS. AND TO HAVE THESE KINDS OF COMMUNICATIONS WITH THE COMMUNITY, TALKING ABOUT HOW OUR RESEARCH FITS INTO THE BROADER CONTEXT OF CURE RESEARCH, SPECIFICALLY IN THIS INSTANCE WITHIN THE DISEASE AREA OF HIV/AIDS, BUT I THINK THIS WOULD BE TRUE ANY TIME WE GO INTO A SET OF PATIENTS WITH THE TYPES OF

TECHNOLOGIES THAT WE'RE DEVELOPING WHICH ARE NOT WITHOUT RISK. I THINK IT'S VERY IMPORTANT THAT THE COMMUNITY BE WELL INFORMED ABOUT WHAT WE'RE TRYING TO DO AND HOW IT FITS IN OTHER EFFORTS.

AND SO FROM THAT PERSPECTIVE, I THINK IT WAS VERY VALUABLE TO BRING THE COMMUNITY IN AND HAVE THAT DIALOGUE. BUT I ALSO THINK IT WAS VERY IMPORTANT AND VERY VALUABLE FOR CIRM TO HAVE THEIR RESEARCH PUT IN THE SAME CONTEXT AS REALLY WHAT ARE THE THREE LEADING PROJECTS WORKING TOWARDS A CURE THAT ARE BEING FUNDED BY NIH. SO A LOT OF TIMES WE'RE KIND OF OUT HERE IN CALIFORNIA AND OUTLIERS AND NOT REALLY THOUGHT OF IN THE SAME CONTEXT AS SOME OF THE OTHER PROJECTS THAT ARE GOING ON. AND ESPECIALLY IN HIV AND AIDS, IT'S KIND OF LIKE CIRM, WHAT'S CIRM? WHAT ARE THEY DOING? AND THIS WAS A GREAT OPPORTUNITY TO REALLY TALK ABOUT OUR WORK AND SHOW NOT ONLY IS WHAT WE'RE FUNDING EXTRAORDINARY AND VALUABLE, BUT IT IS AT LEAST ON PAR WITH WHAT THE NIH IS FUNDING. AND IN MANY WAYS WE MAY BE LEADING THE WAY BECAUSE WE'RE ACTUALLY IN THE CLINIC AT THIS POINT.

SO I JUST THOUGHT IT WAS TREMENDOUS. THE PEOPLE WE HAD IN THE COMMUNITY WERE REALLY LEADERS IN THE HIV/AIDS COMMUNITY THAT HAVE BEEN WORKING

SINCE THE VERY EARLY DAYS OF THE EPIDEMIC. SO A LOT OF FRIENDS, A LOT OF PEOPLE WHO FRANKLY WE'RE LUCKY TO STILL HAVE WITH US. WE'VE LOST SO MANY IN SAN FRANCISCO OVER THE LAST 30 PLUS YEARS, AND WE'RE STILL FIGHTING. AND IT'S JUST GREAT TO HAVE CIRM BE A PARTNER WITH US IN THIS STRUGGLE AND TO HAVE US ALL PULLING TOGETHER.

SO, AGAIN, I WANT TO THANK KEVIN AND MARIA, WHO WAS THE MODERATOR, ALAN WHO CAME AND DELIVERED A NICE TALK FOR THEIR EFFORTS. IT REALLY WAS, I THINK, A GREAT WAY TO LEARN ABOUT WHAT CIRM IS DOING AND A GREAT WAY TO HAVE A VERY SERIOUS ENGAGED DIALOGUE WITH THE COMMUNITY.

CHAIRMAN THOMAS: THANK YOU, MR. SHEEHY. I ECHO CONGRATULATIONS TO EVERYBODY. IT WAS A WONDERFUL, VERY WELL-ATTENDED, AND HIGHLY SOPHISTICATED EVENT, NOT JUST FROM THE STANDPOINT OF THE SPEAKERS AND PANELISTS, BUT THE DEPTH OF QUESTIONS THAT WERE ASKED AND THE UNDERSTANDING OF THE SCIENCE INVOLVED WAS VERY, VERY IMPRESSIVE. SO THE WHOLE THING WAS JUST FIRST-RATE. SO CONGRATULATIONS.

DR. DULIEGE: JON, IF I MAY JUST SECOND WHAT YOU SAID AND CONGRATULATE YOU, JEFF, FOR HAVING ASSEMBLED THIS EFFORT, PARTICULARLY THE PEOPLE THAT

YOU HAD ON THE PANEL WERE ALL ABSOLUTELY TOPNOTCH CLASS FOR THIS. SO THAT WAS AN EXTRAORDINARY EVENT.

FROM THE SCIENTIFIC PERSPECTIVE, WHAT I PARTICULARLY LIKED, AND I MENTIONED THIS IN THE END, WAS THAT ALL OF THESE RESEARCHERS HAVE ESSENTIALLY SPENT THEIR LIFE TRYING TO FIND IMPROVEMENT, IF NOT POSSIBLE CURE, FOR THIS DISEASE, AND IN MANY WAYS THIS HAS BEEN REALLY AN EXTRAORDINARILY HARSH SCIENTIFIC ENDEAVOR THEY HAVE PURSUED. AND THIS TIME FOR THE FIRST TIME IN A LONG PERIOD OF TIME I FELT A SENSE OF CAUTIOUS OPTIMISM AT THE END ABOUT THE FACT THAT, AS THEY SEE IT, CURE IS NOT AN IF, BUT WHEN. I THINK THAT WAS VERY REFRESHING. YES, THEY WERE VERY CAUTIOUS. IT CERTAINLY IS NOT MEANT TO BE FOR TOMORROW AND TO GIVE FALSE HOPES THERE. SO THANK YOU SO MUCH, JEFF, FOR THIS.

CHAIRMAN THOMAS: THANK YOU, ANNE-MARIE.

WE'LL GO ON NOW TO THE ACTION ITEMS ON THE AGENDA, STARTING WITH NO. 6, CONSIDERATION OF APPOINTMENT OF NEW SCIENTIFIC MEMBERS AND REAPPOINTMENT OF EXISTING MEMBERS TO THE GRANTS WORKING GROUP. DR. SAMBRANO.

DR. SAMBRANO: THANK YOU. MR. CHAIRMAN, MEMBERS OF THE BOARD, MEMBERS OF THE PUBLIC, WE'RE COMING TO YOU TODAY WITH SOME NEW NOMINEES FOR

GRANTS WORKING GROUP MEMBERS AS WELL AS SOME REAPPOINTMENT OF OLD MEMBERS WHOSE TERMS ARE JUST ABOUT TO EXPIRE.

ALL OF THE BIOGRAPHIES ARE IN YOUR BOOKS, AND I WILL LIST THE NAMES OF THE NEW NOMINEES. THEY ARE DRS. BRAD BERNSTEIN, RICHARD GIBBS, MARTIN PERA, BARRY ROSEN, AND STEVEN RUSSELL. FOR REAPPOINTMENT WE ARE INTERESTED IN REAPPOINTING DRS. THOR LEMISCHKA FOR A PERIOD OF TWO YEARS, SHELLY HEIMFELD FOR A PERIOD OF SIX YEARS, AND THOMAS ZWAKA FOR A PERIOD OF SIX YEARS. AND I WILL JUST NOTE THAT DR. ZWAKA, ALTHOUGH IT WAS INDICATED IN THE BIO, HE'S ACTUALLY RECENTLY MOVED AND IS NOW AT MT. SINAI MEDICAL CENTER IN NEW YORK.

SO WE ARE SEEKING THE APPOINTMENT AND REAPPOINTMENT OF THESE MEMBERS.

CHAIRMAN THOMAS: THERE ANY QUESTIONS OF DR. SAMBRANO ON THIS POINT? DO I HEAR A MOTION TO APPROVE?

MR. GOLDBERG: MOTION TO APPROVE.

CHAIRMAN THOMAS: MOVED BY MR. GOLDBERG.

DR. DULIEGE: SECOND.

CHAIRMAN THOMAS: SECOND BY ANNE-MARIE DULIEGE. ANY PUBLIC COMMENT ON THE SUBJECT? ALL THOSE IN FAVOR PLEASE SAY AYE. OPPOSED? MOTION

PASSES. THANK YOU.

THE NEXT ITEM IS CONSIDERATION OF THE APPOINTMENT OF A NEW ICOC PATIENT ADVOCATE MEMBER TO THE GRANTS WORKING GROUP. AND I WILL HANDLE THIS. WE WOULD LIKE TO, FOR YOUR CONSIDERATION, NOMINATE AL ROWLETT TO JOIN THE GRANTS WORKING GROUP. DO I HEAR A MOTION TO THAT EFFECT?

MR. TORRES: SO MOVED.

DR. DULIEGE: SECOND.

MR. SHEEHY: SECOND.

CHAIRMAN THOMAS: SECONDED BY MR. SHEEHY. ANY COMMENTS BY MEMBERS OF THE BOARD? ANY COMMENTS BY MEMBERS OF THE PUBLIC?

BEFORE WE VOTE, I'D JUST LIKE TO SAY, AL, WE'RE DELIGHTED YOU'RE GOING TO BE JOINING US. AND YOU WILL, AS YOU HAVE, FIND THIS TO BE A MOST INTERESTING AND UNIQUE EXPERIENCE.

MR. ROWLETT: THANK YOU. I'M LOOKING FORWARD TO THE OPPORTUNITY.

CHAIRMAN THOMAS: ALL THOSE IN FAVOR PLEASE SAY AYE. OPPOSED? MOTION CARRIES.

OKAY.

MR. HARRISON: JUST TO NOTE, I THINK MR. ROWLETT INTENDED TO ABSTAIN FROM THAT VOTE.

MR. ROWLETT: I ABSTAIN.

CHAIRMAN THOMAS: IT'S ALWAYS NICE WHEN MR. HARRISON TELLS YOU WHAT YOU ACTUALLY MEANT TO BE DOING. HE IS LIKE THAT WITH ME ON A ROUTINE BASIS, I ASSURE YOU. SO WELCOME TO THE CLUB, AL.

MARIA, SHOULD WE PROCEED TO ITEM NO. 8 NOW? ITEM NO. 8, REQUEST FOR CONSENT TO INITIATE RULEMAKING ON AMENDING CONFLICT OF INTEREST REGULATIONS FOR NON-ICOC MEMBERS OF THE GRANTS WORKING GROUP. MR. STEIN.

MR. STEIN: THANK YOU, MR. CHAIRMAN, MEMBERS OF THE BOARD. GOOD MORNING. THIS ITEM IS A REQUEST FOR CONSENT FROM THE BOARD TO START A RULEMAKING PROCESS TO AMEND OUR CONFLICT OF INTEREST REGULATIONS FOR NON-ICOC MEMBERS OF THE GRANTS WORKING GROUP. THESE RULES COVER THE SCIENTIFIC MEMBERS OF THE GRANTS WORKING GROUP ONLY. THEY DO NOT COVER PATIENT ADVOCATE MEMBERS OF THE BOARD OR THE CHAIRMAN, WHO ALSO SIT ON THE GRANTS WORKING GROUP.

WE PROVIDED YOU WITH A MEMO ALONG WITH A SET OF PROPOSED AMENDMENTS TO THE REGULATION AS AN ATTACHMENT. I WANT TO EMPHASIZE THAT WE'RE NOT SEEKING APPROVAL OR ADOPTION OF THE PROPOSED AMENDMENTS TODAY. WE'RE JUST ASKING FOR A GREEN LIGHT TO START A RULEMAKING PROCESS. WE'LL BE

POSTING AND SOLICITING INPUT ON THE PROPOSED AMENDMENTS FROM THE BOARD, FROM THE PUBLIC, AND OUR GRANTEES, AND WE'LL REVISE THE PROPOSED AMENDMENTS BASED ON THAT INPUT.

ONCE WE ARRIVE AT A FINAL PROPOSAL, WE'LL BE RETURNING TO THE BOARD FOR ADOPTION PROBABLY IN FOUR TO SIX MONTHS DEPENDING ON THE EXTENT OF THE COMMENTS WE RECEIVE.

THE CONFLICT OF INTEREST RULES HAVE BEEN IN EFFECT SINCE CIRM BEGAN ITS OPERATIONS. SOME TIME AGO WE BEGAN WORKING WITH OUR OUTSIDE COUNSEL, THE REMCHO FIRM IN THE PERSON OF MR. HARRISON, ON CLARIFYING CERTAIN PROVISIONS TO MAKE THE RULES MORE EASILY UNDERSTANDABLE. MAKING THE RULES UNDERSTANDABLE AND EASY TO APPLY FOR OUR REVIEWERS IS CRITICALLY IMPORTANT TO PREVENTING CONFLICTS FROM ARISING IN THE FIRST PLACE.

SINCE THE RULES WERE ADOPTED, THERE HAVE BEEN ONLY TWO CONFIRMED VIOLATIONS. BOTH OF THEM WERE INADVERTENT, AND BOTH OF THEM WERE FAIRLY TECHNICAL. EACH TIME WE INFORMED THE LEGISLATURE THAT AN INADVERTENT VIOLATION HAD OCCURRED AND THAT WE INTENDED TO CLARIFY THE RULES IN AN EFFORT TO PREVENT FUTURE CONFLICTS FROM ARISING. IN FACT, THE REMCHO FIRM HAD BEGUN WORKING ON THESE CLARIFYING

AMENDMENTS BEFORE EITHER OF THOSE VIOLATIONS OCCURRED, WHICH BRINGS US TO TODAY.

THE PROPOSED AMENDMENTS IN THE MEMO ARE PRIMARILY A MATTER OF CLEANING UP REGULATORY LANGUAGE IN AN EFFORT TO CLARIFY IT. THEY DO NOT AMOUNT TO A MAJOR OVERALL OF THE RULES. WE ARE TRYING TO FINE-TUNE THE RULES SO THAT THEY REACH ONLY INTERESTS THAT CAN GENUINELY BE DEEMED MATERIAL.

OUR GOAL IS TO TRY TO STRIKE THE RIGHT BALANCE SO THAT THE RULES PREVENT GENUINELY MATERIAL CONFLICTS FROM INJECTING BIAS INTO THE GRANT REVIEW PROCESS, BUT AT THE SAME TIME DO NOT CAST SO BROAD A NET THAT THE GRANTS WORKING GROUP IS PREVENTED FROM RECRUITING THE BEST SCIENTIFIC AND MEDICAL EXPERTS IN THE FIELD.

BEFORE I GIVE YOU A BRIEF SUMMARY OF THE PROPOSED RULES, I WANT TO PUT THEM IN A LITTLE BIT OF CONTEXT FOR YOU. UNDER STATE LAW A FINANCIAL CONFLICT OF INTEREST IS THE ONLY BASIS FOR RECUSAL. OUR CONFLICT OF INTEREST RULES GO BEYOND STATE LAW IN THAT THEY PROHIBIT PERSONAL AND PROFESSIONAL INTERESTS AS CONFLICTS AS WELL AS FINANCIAL CONFLICTS.

SO I WANT TO EMPHASIZE THAT NOTHING IN THE

PROPOSED AMENDMENTS WE'RE PUTTING FORWARD TODAY CHANGE THAT. THE RULES STILL PROHIBIT PERSONAL AND PROFESSIONAL CONFLICTS. ALSO, NOTHING IN THE PROPOSED AMENDMENTS CHANGED THE BASIC RULE THAT A REVIEWER WHO STANDS TO RECEIVE ANY AMOUNT OF MONEY FROM THE GRANT BEING REVIEWED IS DISQUALIFIED. THE RULES ALSO CONTINUE TO REQUIRE RECUSAL WHERE A REVIEWER HAS A FINANCIAL INTEREST OF $5,000 OR MORE IN THE APPLICANT INSTITUTION AS OPPOSED TO THE PARTICULAR GRANT BEING REVIEWED.

SO I'LL JUST TURN BRIEFLY TO THE PROPOSED AMENDMENTS. THEY AFFECT ALL THREE CATEGORIES OF CONFLICTS: FINANCIAL, PERSONAL, AND PROFESSIONAL.

WITH RESPECT TO FINANCIAL INTERESTS, THE MAJOR CHANGE HERE REGARDS CONFLICTS THAT ARISE WHEN A REVIEWER AND SOMEONE WHO'S INVOLVED IN THE GRANT OR WITH THE APPLICANT INSTITUTION HAVE A, QUOTE, UNQUOTE, COMMON FINANCIAL INTEREST. THE TERM "COMMON FINANCIAL INTEREST" IS VAGUE AND IT'S PROVEN DIFFICULT TO APPLY. IT'S NOT DEFINED IN OUR REGULATIONS OR IN STATE LAW. SO THERE'S NOTHING OUTSIDE OUR REGULATIONS WE COULD USE AS A BASIS FOR INTERPRETING IT.

THE PROPOSED AMENDMENTS ADDRESS THAT AMBIGUITY BY TRIGGERING A CONFLICT WHERE A MEMBER OF

THE REVIEWER'S IMMEDIATE FAMILY HAS AN INTEREST IN THE GRANT OR THE APPLICANT INSTITUTION. AND THE AMENDMENTS DEFINE IMMEDIATE FAMILY TO INCLUDE SPOUSE, DOMESTIC PARTNER, OR DEPENDENT CHILDREN. THAT DEFINITION OF IMMEDIATE FAMILY IS BORROWED FROM STATE CONFLICT OF INTEREST LAW. SO IT'S A TERM THAT'S WELL UNDERSTOOD.

WITH RESPECT TO PERSONAL AND PROFESSIONAL INTERESTS, THE CURRENT RULES REQUIRE RECUSAL WHERE THE REVIEWER HAS A PERSONAL OR PROFESSIONAL ASSOCIATION WITH AN INVESTIGATOR ON THE APPLICANT'S RESEARCH TEAM. IN MOST CASES THERE'S NO REQUIREMENT THAT THE INVESTIGATOR BE IN A POSITION TO EARN ANY SALARY OR COMPENSATION FROM THE GRANT. IN ONE CASE THE CONFLICT EXISTS IF THE INVESTIGATOR STANDS TO RECEIVE ANY SALARY FROM THE GRANT NO MATTER HOW SMALL THE AMOUNT.

THE PROPOSED AMENDMENTS THAT YOU SEE IN THE PACKAGE DO TWO THINGS PRIMARILY. FIRST, THEY FILL A GAP BY APPLYING THE RULES TO BOTH SALARIED EMPLOYEES AND PAID CONSULTANTS. PAID CONSULTANTS WERE NOT EXPLICITLY COVERED BY THE RULES -- ARE NOT EXPLICITLY COVERED BY THE RULES AS THEY STAND NOW. SECOND, THE PROPOSED AMENDMENTS TRIGGER A CONFLICT WHERE THE INVESTIGATOR STANDS TO EARN $5,000 OR MORE

IN CONSULTING FEES OR INCOME FROM THE GRANT.

AND I WOULD NOTE THAT THAT'S THE SAME DISQUALIFICATION TRIGGER THAT'S IN THE RULES CURRENTLY FOR INCOME RECEIVED BY A REVIEWER HIM OR HERSELF FROM THE APPLICANT INSTITUTION.

SO THAT IS A VERY BRIEF SUMMARY OF THE AMENDMENTS. I'M HAPPY TO TAKE QUESTIONS AND COMMENTS. AS I SAID, THIS IS REALLY THE FIRST STEP IN AN ITERATIVE PROCESS IN WHICH WE'LL BE REVISING THESE AMENDMENTS BEFORE WE COME BACK TO THE BOARD FOR FINAL ADOPTION.

MR. SHEEHY: SO I HAVE A COUPLE OF QUESTIONS. SO THE TWO CONFLICTS THAT HAVE HAPPENED, WOULD THEY STILL BE CONFLICTS UNDER THESE CHANGES IN RULES?

MR. STEIN: I DO NOT BELIEVE THEY WOULD HAVE BEEN A CONFLICT. IN EACH OF THOSE CASES, THE INVESTIGATOR WITH WHOM THE REVIEWER HAD A PERSONAL OR PROFESSIONAL RELATIONSHIP STOOD TO EARN LESS THAN $5,000 A YEAR FROM THE GRANT BEING REVIEWED.

MR. SHEEHY: WELL, THEN, I THINK IT'S NOT POSSIBLE FOR ME TO EVEN SUPPORT THE INITIATION OF THIS PROCESS BECAUSE IN THE LAST CASE, AT LEAST WHAT I'VE BEEN TOLD, THE IDENTIFICATION OF THE CONFLICT, WHICH WAS THE REVIEWER AND THE GRANTEE HELD PROPERTY

TOGETHER, AND THE IDENTIFICATION OF THAT CONFLICT WAS MADE BY A FELLOW REVIEWER. SO IF WE HAVE A CONFLICT THAT IS DEEMED MATERIAL BY MEMBERS OF THE SCIENTIFIC COMMUNITY, IT'S HARD FOR ME TO UNDERSTAND WHY THE NET THAT WE'RE CASTING WE SHOULD MAKE THE HOLES BIGGER IN ORDER TO LET THE FISH OUT.

WE'VE ALWAYS PRIDED OURSELVES ON HAVING VERY STRINGENT CONFLICT OF INTEREST RULES. AND TO MY KNOWLEDGE, WE HAVE NOT HAD A PROBLEM GETTING REVIEWERS. SO I THINK IN MY MIND HAVING SOMEONE REVIEW A GRANT FOR SOMEONE WITH WHOM THEY HAVE HELD PROPERTY TOGETHER FOR A LONG PERIOD OF TIME IS INAPPROPRIATE. SO I REALLY WOULD NOT LIKE TO MAKE THAT NET LARGER.

AND THE OTHER INSTANCE, THOUGH, HOWEVER, I DON'T KNOW THAT YOU REALLY HAVE NECESSARILY ADDRESSED THE PROBLEM BECAUSE I THINK IF THERE IS A PROBLEM, IT RELATES TO THE BREADTH OF THE PUBLICATION CO-AUTHORSHIP AND THE LACK OF SPECIFICATION WITHIN THAT CONTEXT. THAT REVIEWER WAS DEEMED IN CONFLICT BECAUSE HE HAD BEEN ON A REVIEW PAPER. AND I THINK FOR PEOPLE WHO ARE SCIENTISTS, AND I'M NOT A SCIENTIST, BUT YOU GET THESE REVIEW PAPERS WHERE EVERYBODY WHO'S EVER SAID ANYTHING IN A FIELD IS KIND OF BROUGHT IN BECAUSE IN

SOME WAY OR ANOTHER THEY CONTRIBUTED TO IT. IT'S NOT THE SAME THING AS WHEN YOU HAVE CONTRIBUTED TO AN ORIGINAL PIECE OF RESEARCH AND YOU WORKED TOGETHER AS A TEAM. THAT SEEMS TO ME LIKE SOMETHING THAT IS A PUBLICATION CONFLICT, NOT HAPPENED TO HAVE A CO-AUTHOR ON A REVIEW ARTICLE IN WHICH EVERYBODY WHO'S KIND OF SENIOR IN THE FIELD GETS SOME SORT OF LITTLE PIECE BECAUSE THEY'VE ALLOWED BITS AND PIECES OF THEIR SCIENCE TO BE USED IN THIS REVIEW ARTICLE. THAT'S NOT ADDRESSED.

I HAVE TO SAY I FEEL LIKE THIS IS ONE OF THESE ISSUES THAT REALLY SHOULD BE TEASED OUT IN COMMITTEE AND NOT BROUGHT TO THE BOARD BECAUSE I CAN TELL YOU ON THIS FIRST, JUST TO STIPULATE THE STIPULATION THAT WE WANT TO CHANGE OUR RULES TO REDUCE THE RISK THAT CONFLICTS WILL ARISE IN THE FUTURE SOUNDS LIKE WE WANT TO CHANGE OUR RULES AND MAKE SURE TO ELIMINATE THE POSSIBILITY OF CONFLICTS BY MAKING OUR RULES LESS STRICT. AND THAT WORRIES ME, AND I THINK THAT THAT IS NOT HELPFUL FOR OUR PROGRAM.

SO I COULD NOT SUPPORT THIS GOING FORWARD AT THIS TIME.

MS. BAUM: JUST FOR CLARITY, I DON'T THINK WE'RE TRYING TO LIMIT THE RULES SO THEY'RE LESS

STRICT. AND WE'LL CERTAINLY TAKE UNDER SUBMISSION YOUR SUGGESTIONS. I THINK THAT IT'S MAYBE -- THE INSTANCE THAT YOU REFER IS MORE, I THINK, A BETTER DEFINITION OF PERSONAL CONFLICT. AND SO I THINK WE WILL DEFINITELY TAKE THIS AND REWORK IT AND COME BACK TO YOU, BUT WE NEED TO MAKE IT CLEAR, AND THAT IS THE ACTUAL INTENT. THERE'S DIFFERENT BUCKETS. SO I THINK WE'RE TRYING TO CLARIFY WHAT THE FINANCIAL BUCKET IS, BUT THEN THERE'S ALSO THE DEFINITION OF PERSONAL CONFLICTS WHICH WE'LL MAKE SURE CAPTURE THE APPROPRIATE ITEMS.

MR. SHEEHY: IF NOT IT'S INAPPROPRIATE, COULD I JUST MOVE TO HAVE THIS SENT TO COMMITTEE, WHATEVER COMMITTEE YOU'D LIKE TO SEND IT TO. THE SCIENCE SUBCOMMITTEE IS FINE WITH ME OR GOVERNANCE IS FINE, EITHER ONE.

CHAIRMAN THOMAS: I THINK THAT'S A GOOD IDEA. BEFORE YOU DO THAT, MR. SHEEHY, CAN WE JUST HEAR FROM MR. JUELSGAARD, WHO I SAID WE'D CALL UPON. WE'LL GET TO THAT IN ONE SECOND. THANK YOU.

DR. JUELSGAARD: THANK YOU, MR. THOMAS. SO I WASN'T HERE WHEN THESE CONFLICT OF INTEREST RULES WERE ADOPTED. I CAME IN AFTER THEY WERE ADOPTED. AND SO I HAVE A SERIES OF QUESTIONS, SOME OF THEM MORE LARGE PICTURE IN NATURE AND SOME OF

THEM MORE RELATED TO THE SPECIFIC LANGUAGE.

LISTENING TO MR. SHEEHY'S COMMENTARY AND THIS FIRST EXAMPLE OF A SHARING OF AN INTEREST IN PROPERTY, WHICH I VIEW TO BE AN ECONOMIC ISSUE AND IS, AS I UNDERSTAND IT, UNDER CALIFORNIA LAW INAPPROPRIATE CONTEXT FOR JUDGING CONFLICT OF INTEREST. WHAT TROUBLES A LITTLE BIT ARE THE OTHER TWO CONTEXTS, THE NOTION OF A PROFESSIONAL OR A PERSONAL CONFLICT OF INTEREST.

AND MY CONCERNS ARE, ONE, ARE THOSE LEGITIMATELY CONCERNS FOR A CONFLICT OF INTEREST, AND TWO IS THE DEFINITION OF THOSE SORTS OF THINGS.

SO BEFORE I START ASKING SOME QUESTIONS ABOUT THEM GENERALLY AND MORE SPECIFICALLY, CAN SOMEBODY TELL ME ABOUT THE GENESIS SINCE OBVIOUSLY IT'S NOT A MATTER OF CALIFORNIA LAW AS I UNDERSTAND IT. IT MUST COME FROM SOME OTHER AREA TO ADOPT THOSE PRINCIPLES OF CONFLICT OF INTEREST TO IMPORT THEM INTO THIS STATE ORGANIZATION OR STATE AGENCY. SO WHY DO WE HAVE PERSONAL AND PROFESSIONAL CONFLICTS OF INTEREST WHEN THEY'RE NOT NECESSARILY A MATTER OF CALIFORNIA CONFLICT OF INTEREST LAW?

MR. STEIN: THE SHORT ANSWER IS THAT PROP 71 DIRECTED THE ICOC TO ADOPT CONFLICT RULES THAT WERE, QUOTE, UNQUOTE, BASED ON CONFLICT RULES

ADOPTED BY THE NATIONAL INSTITUTES OF HEALTH. AND IN 2004-2005, WHEN THE ICOC FIRST ADOPTED THESE RULES, THE NIH RULES CONTAINED PROHIBITIONS ON PERSONAL AND PROFESSIONAL CONFLICTS. THAT'S MY UNDERSTANDING OF THE GENESIS OF THE RULE.

MR. SHEEHY: YOU HAVE TO REMEMBER THAT OUR FIRST PRESIDENT WAS ZACH HALL, WHO HAD HEADED ONE OF THE INSTITUTES OF THE NATIONAL INSTITUTES OF HEALTH, AND ARLENE CHIU WAS IN CHARGE OF REALLY SETTING UP OUR PEER REVIEW PROCESS. AND SHE HAD BEEN -- SHE WORKED WITH ZACH AT THAT PARTICULAR NATIONAL INSTITUTE. SO THEY DEVISED -- THE TWO OF THEM ARE THE GENESIS OF THESE RULES. SO THERE'S A DIRECT CORRELATION BETWEEN WHAT HAPPENS AT NIH AND THE WAY OUR RULES WERE DESIGNED.

DR. JUELSGAARD: SO JUST TO BE CLEAR ABOUT THAT, WHEN YOU SAY THERE'S A DIRECT CORRELATION, JEFF, IF I WERE TO LOOK AT THE NIH CONFLICT OF INTEREST RULES, OURS WOULD BE NO NARROWER THAN THEIRS ARE. IS THAT A FAIR STATEMENT, OR ARE OURS NARROWER THAN THE NIH'S?

MR. STEIN: I CAN ADDRESS THAT A LITTLE BIT. I ADMITTEDLY AM NOT AN EXPERT ON THE NIH CONFLICT RULES. OUR RULES ARE BASED ON THE NIH RULES, BUT THEY ARE NOT IDENTICAL TO. WE DID NOT

ADOPT THEM LOCK, STOCK, AND BARREL. THERE ARE A FEW PLACES WHERE OUR RULES DEVIATE FROM THE NIH RULES.

ONE EXAMPLE, I BELIEVE, HAS TO DO WITH FINANCIAL BENEFITS THAT A REVIEWER MAY RECEIVE FROM THE APPLICANT INSTITUTION AS OPPOSED TO FROM THE GRANT ITSELF. OUR RULES HAVE A LIMIT OF $5,000 IN A YEAR, AND THE NIH RULE, AS I READ IT, NOW AT LEAST, HAS A HIGHER THRESHOLD, $10,000. SO THAT'S ONE DIFFERENCE.

OUR RULES ARE, LIKE I SAID, LOOSELY BASED IN THAT WE PROHIBIT PERSONAL AND PROFESSIONAL CONFLICTS, BUT THEY ARE NOT IDENTICAL.

DR. JUELSGAARD: LET ME JUST ASK ABOUT A SPECIFIC ONE BECAUSE THIS IS PERHAPS FOR ME ONE OF THE MOST TROUBLING OF THE CONFLICT NOTIONS AND IN SOME SENSE FOR ME IS ANTITHETICAL TO THE WHOLE NATURE OF SCIENCE. AND SO I'LL, WITHOUT PICKING IT OUT OF THE SPECIFIC, IT'S UNDER PROFESSIONAL CONFLICTS, PICKING OUT THE EXACT NUMBER. IT'S PERSON LISTED ON A GRANT APPLICATION AS A PRINCIPAL INVESTIGATOR OR A CO-PRINCIPAL INVESTIGATOR AS SOMEONE WHO WILL RECEIVE A SALARY OR CONSULTING FEE OF $5,000 OR MORE PER YEAR FROM THE GRANT IS A PERSON WITH WHOM THE MEMBER HAS HAD LONG-STANDING SCIENTIFIC DIFFERENCES OR DISAGREEMENTS THAT ARE

KNOWN TO THE PROFESSIONAL COMMUNITY AND COULD BE PERCEIVED AS AFFECTING THE MEMBER'S OBJECTIVITY.

SO I GUESS OVER THE YEARS IN MY INVOLVEMENT WITH SCIENCE AND MORE PERHAPS NOT DIRECTLY IN SCIENTIFIC JUDGMENTS, BUT MORE AS AN OBSERVER, THE NOTION OF DIFFERENCES AND DISAGREEMENTS HAVE BEEN, IN MY MIND AND MANY OTHERS, I THINK, PERCEIVED AS A HEALTHY THING. SO THE NOTION THAT SCIENCE IS MONOLITHIC IN NATURE IS, I THINK, ABHORRENT TO A LOT OF PEOPLE.

SO WHAT PURPOSE DOES THIS PARTICULAR -- FIRST OF ALL, DOES THE NIH HAVE A SIMILAR SITUATION AND WHAT PURPOSE DOES IT REALLY SERVE?

MR. STEIN: I BELIEVE IT DID AT THE TIME THE RULES WERE ADOPTED. I CAN'T SPEAK TO WHAT THE NIH RULES SAY PRECISELY ON THIS TOPIC AS OF TODAY. NIH RECENTLY REVISED ITS RULES.

THE PURPOSE OF THE RULE IS A BELIEF THAT SOMEONE WHO HAS LONG-STANDING SCIENTIFIC DIFFERENCES WITH SOMEBODY INVOLVED IN THE RESEARCH GRANT COULD BE PERCEIVED AS NOT BEING ABLE TO PROVIDE CIRM WITH OBJECTIVE, MUTUAL ADVICE ABOUT THE PROJECT. THAT'S THE BASIS FOR IT. AND IT SOUNDS TO ME LIKE YOU HAVE A FUNDAMENTAL POLICY DISAGREEMENT WITH THAT.

DR. JUELSGAARD: SO REMEMBER THAT, AND I

WENT TO MY FIRST GRANTS WORKING GROUP SESSION AT THE LAST ONE, AND I WAS THERE FOR THE THREE DAYS THAT IT WENT ON. AND I SAW I THINK THERE WERE AROUND 15 PEOPLE SITTING AROUND A TABLE, ALL MEMBERS OF THE GRANTS WORKING GROUP, ALL HAVING THE OPPORTUNITY TO EXPRESS THEIR OPINIONS ABOUT DIFFERENT ASPECTS OF EACH APPLICATION THAT HAD BEEN PRESENTED. AND THE NOTION OF SAYING TO SOMEBODY, "WELL, WE KNOW YOU DISAGREE WITH WHAT THIS PERSON SAYS, SO THEREFORE JUST BE QUIET. WE DON'T EVEN WANT TO HEAR FROM YOU," I JUST FIND A LITTLE DISCONCERTING.

AT THE END OF THE DAY, LET OTHER PEOPLE JUDGE. THERE ARE A WHOLE BUNCH OF PEOPLE PROVIDING VOTES, IF YOU WILL; THAT IS, SCORES. AND THE IDEA THAT ONE PERSON WOULD SOMEHOW DRASTICALLY AFFECT THE OUTCOME OF THIS BECAUSE THEY CAN SWAY ALL THE OTHER PEOPLE, IN ESSENCE, WHAT YOU'RE DOING IS YOU'RE SIMPLY SAYING WE DON'T WANT TO HEAR FROM YOU. WE BELIEVE THAT YOUR OPINION, BECAUSE YOU DON'T AGREE WITH SOMEBODY ELSE, ISN'T WORTH BEING HEARD. AND AS I SAID, I JUST FIND THAT PRETTY DISCONCERTING.

CHAIRMAN THOMAS: DR. KRONTIRIS HAD A COMMENT, I BELIEVE, ON THIS POINT. OKAY. LET'S GO TO DR. SAMBRANO AND THEN MARCY FEIT, PLEASE.

DR. SAMBRANO: I JUST WANT TO CLARIFY.

MR. JUELSGAARD, I THINK YOU'RE CORRECT. WE DO WANT TO ENCOURAGE REVIEWERS WHO HAVE DIFFERENCES OF OPINION TO EXPRESS THOSE DIFFERENCES OF OPINION. I THINK WHAT THIS RULE IS TRYING TO CAPTURE IS WHEN YOU HAVE A LONG-STANDING VIEW. FOR EXAMPLE, IF YOU HAVE A SCIENTIST WHO ADAMANTLY BELIEVES THIS CANNOT POSSIBLY BE TRUE, I AM NOT EVEN GOING TO CONSIDER THIS PROPOSAL BECAUSE THIS IS WHAT I BELIEVE, OR BECAUSE IN VENUES SUCH AS CONFERENCES, A CERTAIN REVIEWER HAS SPOKEN OUT AGAINST THIS INVESTIGATOR, THAT RISES TO A DIFFERENT LEVEL OF DISAGREEMENT WHICH WE ARE TRYING TO CAPTURE HERE WHERE WE THINK THIS IS NOT GOING TO BE A REVIEWER WHO'S GOING TO PROVIDE AN UNBIASED, FAIR REVIEW.

SOMEBODY WHO MAY DISAGREE IS A NORMAL PART OF THE PROCESS OF REVIEWING ANY SCIENTIFIC PROPOSAL. IT'S JUST WE WANT TO PUT IT IN A SETTING WHERE AND IN A CONTEXT WHERE THAT PROPOSAL IS GOING TO BE LOOKED AT OPENLY AND BOTH THE GOOD AND THE BAD AND THE AGREEMENTS AND DISAGREEMENTS ARE GOING TO COME INTO PLAY IN A FAIR WAY.

DR. JUELSGAARD: WELL, I HEAR THAT ANSWER AND I GUESS JUST FUNDAMENTALLY IT DOESN'T RING FOR ME, TRUE THAT IS. THE IDEA THAT BY -- WE WOULD CALL THIS IN THE WORLD THAT I DEAL WITH SORT OF A PRIMA

FACIE CASE THAT WHAT THE APPLICANT PRESENTS IS TRUE. AND THE IDEA THAT THERE'S SOMEBODY WHO STRONGLY OBJECTS TO WHAT THEY'RE PRESENTING OR THEIR BELIEF SYSTEM IS NOT TO BE HEARD, IN ESSENCE, GIVES A REAL LEG UP TO THAT PARTICULAR APPLICANT. YOU SIMPLY BOX OUT AN ALTERNATIVE POINT OF VIEW.

SO I'M BACK TO THE QUESTION OF, ONE, DOES THE NIH REALLY HAVE THAT AS A POLICY? AND TWO, DO WE REALLY THINK THAT THAT'S A POLICY THAT WE SHOULD FOLLOW?

MR. STEIN: THEY DO HAVE THIS AS A POLICY. AND, AGAIN, THE POINT OF THIS RULEMAKING PROCESS IS TO SOLICIT INPUT FROM THE BOARD ABOUT HOW THE RULE SHOULD BE AMENDED. AND WE CAN CERTAINLY GO BACK AND LOOK AT THAT ISSUE IN MORE DETAIL AS PART OF THIS RULEMAKING PROCESS. LIKE I SAID, WE'RE NOT HERE ASKING FOR APPROVAL OF THE PROPOSED AMENDMENTS TODAY. THIS IS REALLY THE START OF A PROCESS. AND IF THE BOARD WANTS TO GO BEYOND MAKING THE CLARIFICATIONS AND OTHER CHANGES THAT WE PUT FORWARD SO FAR, WE CAN CERTAINLY DO THAT. WE CAN EXAMINE ANY OF THE POLICY ISSUES THAT UNDERLIE THESE RULES.

MS. FEIT: JUST A COMMENT IN CONCERT WITH DR. JUELSGAARD ABOUT THIS ITEM. YOU KNOW, IF WE'RE ENCOURAGING COLLABORATION, AND WE ARE, AT SOME POINT

WE'RE GOING TO RUN INTO WHERE WE CAN'T HAVE ANYBODY REVIEW BECAUSE EVERYBODY IS COLLABORATING. THAT'S MY CONCERN BECAUSE WE ARE ENCOURAGING THAT ACROSS THE BOARD. SO THAT'S ONE ISSUE.

BUT THE SECOND ISSUE, TO SPEAK ON THE CONFLICT, IS IN ALL THE TIMES THAT I'VE SAT IN ON THE GRANT REVIEWS, WHENEVER THERE'S AN OUTLIER SCORE, OBVIOUSLY THAT REPRESENTS AN OUTLYING OPINION, I'M ALWAYS IMPRESSED HOW IT'S RESOLVED AND BROUGHT MORE TO THE CENTER. I THINK THERE HAS ONLY BEEN ONE TIME WHERE THERE WAS JUST ONE MINOR COMMENT MADE BY A RESEARCHER, AND IT DID NOT AFFECT THE REVIEW AND IT DID NOT AFFECT THE OUTCOME.

BUT I DO FEEL THAT HAVING THE DIVERSE OPINION IS REALLY IMPORTANT. AND I WOULDN'T WANT TO HAVE ANYTHING IN WRITING THAT WOULD DAMP THAT BECAUSE WHEN YOU LISTEN TO THE REVIEWERS, THEY REALLY ARE SINCERE ABOUT THE DIRECTION AND THEIR EXPERIENCE. AND I THINK IT'S IMPORTANT, AND THEY DON'T ALWAYS AGREE.

CHAIRMAN THOMAS: MR. JUELSGAARD.

DR. JUELSGAARD: JUST TO MOVE BEYOND THIS, AND I UNDERSTAND THAT THIS IS STILL A WORK IN PROGRESS AND THERE ARE WAYS TO HAVE INPUT, AND THERE ARE A NUMBER OF THINGS, SOME LANGUAGE THINGS THAT

ARE IN HERE THAT I THINK REALLY ARE VERY AMBIGUOUS. THE NOTION OF A CLOSE PERSONAL FRIEND, FOR EXAMPLE, HOW THE HECK IS THAT DEFINED? AND ON PERSONAL DIFFERENCES, HOW IS THAT DEFINED?

PUTTING THAT ASIDE, LET ME ASK YOU. THERE'S ONE PROVISION THAT CALLS FOR DISCLOSURE, AND THERE ARE POTENTIALLY SIX DIFFERENT DISCLOSURES THAT MIGHT HAVE TO BE MADE. THESE ARE ABOUT FINANCIAL HOLDINGS OR OTHER -- FINANCIALLY RELATED HOLDINGS. WHAT HAPPENS WHEN THESE DISCLOSURES TAKE PLACE? WHAT'S THE RESULT OF THE DISCLOSURES? WHAT HAPPENS AS A CONSEQUENCE OF THEM? SO, FOR EXAMPLE, SOMEBODY HAS AN INVESTMENT IN A PRIVATELY HELD BIOTECHNOLOGY COMPANY.

MR. STEIN: THE DISCLOSURE REQUIREMENT IS REALLY WHAT I WOULD CALL A BACKSTOP OR ANOTHER SOURCE OF INFORMATION THAT CIRM STAFF RELIES ON TO DETERMINE WHETHER OR NOT A REVIEWER MAY HAVE A CONFLICT. IN THE FIRST INSTANCE WE RELY ON THE REVIEWERS THEMSELVES TO SCREEN THEMSELVES FOR POTENTIAL CONFLICTS, PERSONAL, FINANCIAL, OR PROFESSIONAL. WE GIVE EACH REVIEWER A LONG LIST OF THE PI, THE CO-PI, AND ANYBODY ELSE INVOLVED IN THE GRANT AND ASK THEM TO GO OFF AND CHECK A CONFLICT WITH ANYBODY WITH WHOM THEY HAVE A CONFLICT UNDER

THE RULES.

THE DISCLOSURE FORM THAT YOU'RE TALKING ABOUT, THE DISCLOSURE REQUIREMENT, GIVES US ANOTHER SOURCE OF INFORMATION AGAINST WHICH WE CAN CHECK WHETHER OR NOT THE REVIEWER MAY HAVE A CONFLICT WITH A PARTICULAR APPLICATION. SO IF A REVIEWER, FOR EXAMPLE, HAD AN INVESTMENT IN A PRIVATE BIOTECH COMPANY AND THAT COMPANY WERE INVOLVED IN SOME FASHION IN THE GRANT BEING REVIEWED, WE WOULD BE AWARE OF THAT.

DR. JUELSGAARD: I UNDERSTAND THAT. AND THAT PARTICULAR CASE IS, I THINK, AN APPROPRIATE CASE. AND THE LANGUAGE IF IT SAID HAS AN INVESTMENT IN A PRIVATELY HELD BIOTECHNOLOGY COMPANY THAT IS SOMEHOW INVOLVED IN A GRANT APPLICATION PROCESS, WELL, THEN, WE'RE RIGHT ON POINT. THIS IS SO BROAD. IT JUST SAYS, WELL, IF YOU OR ANY IMMEDIATE MEMBER OF YOUR FAMILY HAS ANY SORT OF INVESTMENT, IT DOESN'T SPECIFY ANY DOLLAR AMOUNT, IN A PRIVATELY HELD BIOTECHNOLOGY COMPANY, PLEASE DISCLOSE IT TO US.

AND FOR ME I APPRECIATE PEOPLE MAKING DISCLOSURES. I THINK THEY'RE IMPORTANT, BUT THEY'RE IMPORTANT IN CONTEXT, NOT IMPORTANT IN GENERAL. I THINK YOU REALLY -- I'M A BIG BELIEVER IN THE RIGHT

OF PRIVACY AND PEOPLE'S ABILITY TO PROTECT THEIR OWN PERSONAL INFORMATION EXCEPT WHERE THE RULES REQUIRE OTHERWISE. FOR ME IT'S IMPORTANT TO DRAW LINES THAT REALLY MAKE A DIFFERENCE. WHERE IS IT IMPORTANT THAT YOU HAVE DISCLOSURE, AND DRAW THE LINE THERE AS OPPOSED TO MORE GENERALLY.

MR. STEIN: WITH RESPECT TO THE SPECIFIC RULE YOU'RE TALKING ABOUT IN THE SITUATION YOU POSE, THE RULES PROHIBIT REVIEWERS FROM RECEIVING INCOME OR COMPENSATION OF ANY AMOUNT FROM THE GRANT ITSELF, BUT ALSO THEY PROHIBIT INDIRECT FINANCIAL BENEFITS. SO THAT IF A REVIEWER STANDS TO RECEIVE $5,000 OR MORE OR HAS AN INVESTMENT WORTH $5,000 OR MORE IN THE COMPANY ITSELF UNRELATED TO THE PROPOSAL, THAT'S A CONFLICT AS WELL. SO THAT'S WHY, AT LEAST UNDER THE PRESENT RULES, WE REQUIRE THOSE DISCLOSURES.

DR. JUELSGAARD: BUT IF YOU SAID AN INVESTMENT OF $5,000 OR MORE BY A MEMBER OR HIS IMMEDIATE FAMILY, AND THIS IS JUST IN ANY PRIVATE BIOTECHNOLOGY COMPANY, BUT ONE MORE RELATED TO THE NATURE OF THE APPLICATION DIRECTLY OR INDIRECTLY, I THINK THAT WOULD BE A LOT MORE RELEVANT THAN THIS SORT OF BROAD, SWEEPING NET-LIKE APPROACH TO TELL US ABOUT ANY INVESTMENT YOU HAVE NO MATTER HOW MINOR IN ANY PRIVATELY HELD BIOTECHNOLOGY COMPANY NO MATTER

WHAT KIND OF TECHNOLOGY THEY'RE ASSOCIATED WITH, SOMETHING THAT COULD BE COMPLETELY UNRELATED TO ANYTHING WE'RE EVER INVOLVED WITH.

AGAIN, IT'S THE SPECIFICITY OF THESE THINGS, AND IT GOES TO THE MATTER OF DISCLOSURE, AND IT GOES TO HOW BROAD A NET WE'RE GOING TO CAST. AND MY CONCERN IS THAT WE CAST IT NO BROADER THAN IS NECESSARY TO ASSURE OURSELVES THAT WE DON'T HAVE A CONFLICT OF INTEREST AND LET ALL THE REST OF IT REMAIN PRIVATE UNLESS PEOPLE WANT TO DISCLOSE THEMSELVES.

MR. STEIN: AGAIN, ALL OF THIS INPUT IS IMPORTANT AND THAT'S WHY WE'RE HERE. WE CAN CERTAINLY TAKE THAT BACK AND LOOK AT THE DISCLOSURE REQUIREMENTS IN THE RULES AND COME BACK TO YOU WITH AMENDMENTS.

DR. JUELSGAARD: THANK YOU.

CHAIRMAN THOMAS: MR. SHEEHY.

MR. SHEEHY: MAYBE NOW MIGHT BE APPROPRIATE TO MAKE MY MOTION BECAUSE IT SOUNDS LIKE WE HAVE A LOT OF ISSUES. I THINK IT WOULD BE VERY HELPFUL, AND I'D LIKE TO ADD THIS TO MY MOTION. IT MIGHT BE POSSIBLE TO SEE IF EITHER -- I DON'T KNOW IF ZACH HALL IS STILL IN CALIFORNIA. I KNOW ARLENE CHIU IS AROUND. MAYBE THE ARCHITECTS OF OUR

POLICIES COULD COME.

PART OF WHAT WE NEED TO DO IS HAVE OUR POLICIES BE CONSISTENT WITH WHAT PEOPLE GENERALLY DO IN AN NIH SETTING JUST SO THAT PEOPLE AREN'T HAVING TO KIND OF RESTRUCTURE HOW THEY THINK ABOUT THESE THINGS. SO I THINK HAVING SOME SORT OF COHERENCE WITH WHAT HAPPENS AT NIH AND HAVING SOME DISCUSSION OF HOW THESE RULES CAME INTO PLACE WOULD BE HELPFUL, BUT I REALLY THINK THAT THIS NEEDS TO GO BACK TO COMMITTEE BECAUSE I DON'T THINK WE CAN SOLVE THIS TODAY. AND I DON'T THINK STARTING THE RULEMAKING PROCESS IS AN APPROPRIATE WAY TO BEGIN THIS DISCUSSION. I THINK IT'S BETTER TO STOP NOW, SEND THIS ALL BACK TO COMMITTEE. AND THEN I THINK STEVE'S ISSUES SHOULD BE ADDRESSED.

AND, YOU KNOW, WE'VE TALKED ABOUT SOME OF THE DILEMMAS WITH WHETHER OR NOT WE'RE GETTING ADEQUATE AMOUNT OF INDUSTRY PEOPLE INVOLVED IN THE GRANTS WORKING GROUP. SO THIS MAY HAVE BEEN AN UNINTENTIONAL BARRIER. SO I THINK ALL THE QUESTIONS THAT STEVE IS ASKING OR ALL THE QUESTIONS THAT STEVE IS ASKING MIGHT BE PART OF THAT DISCUSSION AS WELL.

CHAIRMAN THOMAS: MR. HARRISON, IS THIS SOMETHING THAT REQUIRES A MOTION, OR CAN I REFER IT TO COMMITTEE WITHOUT A VOTE?

MR. HARRISON: IT'S AT YOUR PREFERENCE. IF MR. SHEEHY WANTS TO MAKE A MOTION --

CHAIRMAN THOMAS: MOVED BY MR. SHEEHY. SECONDED BY SENATOR TORRES. ANY FURTHER DISCUSSION BY MEMBERS OF THE BOARD? COMMENTS FROM MEMBERS OF THE PUBLIC? HEARING NONE, ALL THOSE IN FAVOR -- MR. HARRISON.

MR. HARRISON: CAN I JUST CLARIFY THE MOTION SO STAFF UNDERSTAND? ARE YOU ASKING THAT IT BE REFERRED TO THE GOVERNANCE SUBCOMMITTEE?

CHAIRMAN THOMAS: YES. IS THAT THE APPROPRIATE COMMITTEE, MR. HARRISON?

MR. SHEEHY: IS IT MOST COMFORTABLE LEAVING IT AT THE DISCRETION OF THE CHAIR? IT'S UP TO YOU, J.T. LIKE I SAID, I DON'T THINK ANYBODY HAS REALLY THOUGHT ABOUT THIS. SO WHATEVER YOU WANT TO DO IS FINE WITH ME.

CHAIRMAN THOMAS: I THINK REFERRING IT IS ABSOLUTELY THE CORRECT THING TO DO. I'M ASKING MR. HARRISON WHICH OF THE SUBCOMMITTEES WOULD BE APPROPRIATE. I BELIEVE IT WOULD BE GOVERNANCE.

SO THE MOTION IS TO REFER THIS DISCUSSION TO GOVERNANCE, TO HOLD OFF INITIATING THE RULEMAKING PROCEDURE PENDING THAT REVIEW, AND THEN WE WILL PROCEED FROM THERE.

ALL THOSE IN FAVOR PLEASE SAY AYE. OPPOSED? MOTION CARRIES. THANK YOU, MR. STEIN. THANK YOU, DR. SAMBRANO. THANK YOU, MR. SHEEHY, MR. JUELSGAARD, FOR YOUR VERY VALUABLE COMMENTS.

NEXT ITEM, ALWAYS THE MOST CONTROVERSIAL ON THE MENU, CONSIDERATION OF MINUTES FROM THE LAST BOARD MEETINGS. DO I HEAR A MOTION TO APPROVE?

MR. JUELSGAARD: SO MOVED.

CHAIRMAN THOMAS: SECONDED BY DR. PETERSON.

ALL THOSE IN FAVOR PLEASE SAY AYE. OPPOSED? MR. HARRISON. THREE ITEMS IN A ROW YOU'VE RAISED YOUR HAND, MR. HARRISON. IT'S VERY DISTRESSING. ANY COMMENTS BY MEMBERS OF THE PUBLIC ON THE MINUTE MOTION? HEARING NONE, ALL THOSE APPROVE PLEASE SAY AYE. OPPOSED? MOTION CARRIES.

SO THAT CONCLUDES THE ACTION ITEMS FOR TODAY. MOVE ON TO DISCUSSION ITEMS, FIRST OF WHICH IS THE LATEST IN THE SERIES OF UPDATES ON CIRM'S TRANSLATIONAL PROGRAM WILL BE PRESENTED BY DR. OLSON AND DR. FEIGAL.

DR. OLSON: CHAIRMAN THOMAS, MEMBERS OF THE BOARD, MEMBERS OF THE PUBLIC, WHAT I'D LIKE TO DO -- WHAT DR. FEIGAL AND I WOULD LIKE TO DO TODAY IS GIVE YOU AN UPDATE, FOLLOW-ON FROM PRESENTATIONS

PREVIOUSLY MADE TO YOU IN JANUARY AND MARCH OF THIS YEAR, AND THAT WE LOOK FORWARD TO BEING AN ONGOING EVENT.

SO WHAT I'D FIRST LIKE TO REMIND THE BOARD OF IS THAT WE ARE IN THE STRATEGIC PLAN THAT YOU APPROVED IN THE MIDDLE OF LAST YEAR, WE ARE IN THE STAGE OF WHAT WE CALL FOCUS. THAT IS, WE ARE TRYING TO PRIORITIZE THOSE PROJECTS AND INVESTMENTS THAT WILL LEAD TO THE DISCOVERY AND DEVELOPMENT OF CURES, THERAPIES TO RELIEVE PATIENT SUFFERING AND USING STEM CELL THERAPIES TO DO THIS. SO DISCOVERY AND DEVELOPMENT OF THESE THINGS. IN PARTICULAR, WE'RE AT THE STAGE WHERE WE WANT TO THINK ABOUT, WE WANT TO DRIVE CLINICAL TRIALS FOR PATIENTS TO GENERATE PRELIMINARY EVIDENCE OF CLINICAL BENEFIT.

I THINK WE ALL KNOW THAT THE PROCESS FROM DISCOVERY TO THERAPY IS A LONG ONE. WE BELIEVE THAT WE'RE AT THE STAGE WHERE WE CAN START TAKING THOSE STEPS TO ACTUALLY DEFINE THE FIRST HINTS OF CLINICAL BENEFIT. AND THEN IN ORDER TO THINK ABOUT MOVING THESE THINGS FORWARD, IN ORDER TO THINK ABOUT LEVERAGING CIRM'S RESOURCES, WE ARE ALSO ENCOURAGING THE FORMATION OF PARTNERSHIPS. SO THOSE WERE SOME OF THE CRITICAL POINTS IN THAT POINT.

I JUST WANT TO REMIND YOU THAT THE PROGRAM

WE'RE GOING TO TALK ABOUT COVERS THE PRODUCT DEVELOPMENT SPECTRUM. THE EARLY TRANSLATIONAL OR THE RESEARCH PROGRAMS, THE DISEASE TEAM PROGRAM HAVE SPANNED DIFFERENT STAGES ALONG THAT PIPELINE. YOU CAN SEE THAT THE DISEASE TEAM I SHOWED A LOT OF OVERLAP, THE GOAL OF THAT PROGRAM AN IND. SUBSEQUENT PROGRAMS HAVE FOCUSED ON MOVING INTO THE CLINIC AND COMPLETING CLINICAL TRIALS. SO THIS IS WHAT WE ARE GOING TO BE TALKING ABOUT.

JUST A BIT OF STATISTICS HERE. THIS IS WHERE THE PROGRAM STANDS AT THIS POINT. THERE HAVE BEEN 98 AWARDS MADE, PROJECTS HAVE BEEN AWARDED FOR A TOTAL OF $700 MILLION. MANY OF THESE ARE JUST GETTING STARTED, BUT WE ACTUALLY HAVE A LITTLE BIT OF HISTORY ON SOME OF THEM. SO WE LOOK FORWARD TO TELLING YOU.

WHAT I WANT TO FOCUS ON NOW IS I WANT TO FOCUS ON THE EARLY TRANSLATIONAL RESEARCH PROGRAM. THERE ARE DISCOVERIES MADE IN BASIC SCIENCE. THIS IS THE PROGRAM THAT ACTUALLY ENABLES THE EARLY STEPS THAT ARE REQUIRED FOR THE TRANSLATION OF PROMISING AND INNOVATIVE STEM CELL DISCOVERIES. THIS IS THE CHANCE FOR INVESTIGATORS TO TEST THERAPEUTIC HYPOTHESES. AND IF THOSE HYPOTHESES ARE BORNE OUT, TO START TAKING THE STEPS THAT WILL ENABLE A ROBUST

DECISION AS TO WHETHER THERE IS SOMETHING THAT CAN BE MOVED INTO CLINICAL TRIALS. I REMIND YOU ALL YOU HEAR THESE NUMBERS ABOUT $2 BILLION THAT ARE REQUIRED TO GET ONE THERAPEUTIC. A LOT OF IT IS THE FAILURES THAT OCCUR IN RESEARCH BECAUSE YOU HAVE A LOT OF HYPOTHESES IN RESEARCH THAT NEVER MAKE IT. BUT IF YOU DON'T DO THE WORK, YOU NEVER KNOW. SO THAT'S ONE THING.

SO FOR THE EARLY TRANSLATION IN PARTICULAR, FOR THE PROGRAMS SINCE INCEPTION, WE'VE HAD THREE MAIN GOALS. ACHIEVE IN VITRO OR IN VIVO PROOF OF CONCEPT. SO WE ASK THE PROGRAMS TO TARGET THAT. THAT'S ONE THING. THAT'S OUR DEVELOPMENT CANDIDATE FEASIBILITY AWARD. OR ACHIEVE A DEVELOPMENT CANDIDATE READY TO MOVE INTO IND-ENABLING PRECLINICAL DEVELOPMENT. THAT'S OUR DEVELOPMENT CANDIDATE AWARD. AND, AGAIN, I REMIND YOU THIS IS MOVING A STEP -- IT'S STILL HYPOTHESIS TESTING, BUT IT'S STARTING TO DO THE CHARACTERIZATION. IT'S STARTING TO SHOW ROBUST DISEASE MODIFICATION ACTIVITY. IT'S STARTING TO SAY WHAT ARE THE ISSUES I'M GOING TO FACE IN MAKING THIS? WHAT DO I SEE IN TERMS OF VERY PILOT SAFETY? SO IT'S STARTING TO THINK ABOUT THOSE THINGS.

AND THEN THE FIRST PROGRAM WE DID, OUR

FIRST EARLY TRANSLATIONAL AWARD, ALSO INCLUDED A BOTTLENECK COMPONENT. WHAT ARE SOME OF THE MAIN BOTTLENECKS? THAT HAS SINCE, I THINK, BEEN TAKEN OVER BY THE TOOLS AND TECHNOLOGIES, BUT I DO WANT TO AT LEAST TALK ABOUT THOSE HERE.

THIS IS JUST A SLIDE THAT GIVES YOU A LOT OF THE DETAILS ABOUT IT. IT NOTES THAT -- I DO WANT TO REMIND YOU OF THIS, THAT BASICALLY THAT FIRST EARLY TRANSLATION PROGRAM STARTED AT PRETTY MUCH THE END OF 2009. AND AS YOU KNOW, THE FIRST DISEASE TEAM AWARD DIDN'T EVEN START UNTIL 2010. SO THIS JUST GIVES YOU SOME FOR YOUR INFORMATION.

I AM GOING TO FOCUS MY UPDATE TODAY PRIMARILY ON THE ET I PROGRAMS AND SOME OF THE ET II PROGRAMS. MOST OF THE ET I PROJECTS ARE FINISHED AT THIS POINT, NOT ALL OF THEM, BUT MOST OF THEM. AND SO THAT'S WHAT I'M GOING TO TALK ABOUT.

THIS IS A VISUAL OF HOW THE MONEY AND THE NUMBERS GO WITHIN THIS ET PROGRAM. SO YOU CAN SEE -- OH, I ACTUALLY DID WANT TO MAKE A POINT, AND I THINK I HIGHLIGHTED THIS IN THE DETAIL SLIDE, THAT THE BOARD HAS COMMITTED 256 MILLION TO THIS PROGRAM. SO FAR WE'VE ACTUALLY SPENT 241. SO WHAT THE BOARD COMMITS THEN STAFF GOES THROUGH, AND SOME EXPENSES ARE NOT ALLOWED, SOME FACILITIES B COSTS COME OFF,

AND THERE IS AN OCCASIONAL AWARD WHERE WE REDUCE OR AN AWARD HAS BEEN STOPPED IN ONE INSTANCE. THE ACTUALS, THE NUMBERS I WILL ALWAYS GIVE YOU ARE WHAT THE BOARD COMMITTED BECAUSE THE OTHERS ARE ALWAYS CHANGING. AND THAT'S ACTUALLY WHAT YOU GET WHEN I DO THE FINANCIAL UPDATE ON THE RFA FUNDING.

ANOTHER THING THAT I WANTED TO REMIND YOU ABOUT, AS PART OF THIS MOVE THE STEM CELL FIELD FORWARD, AS PART OF THE DISCOVERY, WE HAVE HAD PRETTY MUCH A PRIORITY IN THE EARLY TRANSLATION PROGRAM. AND THEY'RE LISTED HERE. ADVANCE CELL THERAPIES DERIVED FROM PLURIPOTENT STEM CELLS. THAT IS UNIQUELY -- CELL THERAPY, I THINK, IS UNIQUELY WITHIN OUR REMIT. PLURIPOTENT STEM CELLS, BECAUSE THEY REPRESENT AN INEXHAUSTIBLE STARTING MATERIAL FOR POTENTIAL CELL THERAPIES THAT REALLY CAN MAKE A SIGNIFICANT DIFFERENCE AND I EMPHASIZE THAT. I DON'T THINK ANYBODY WANTS TO GO THROUGH THE CHALLENGES OF A CELL THERAPY WHERE IT DOESN'T MAKE SENSE. BUT THIS HAS BEEN A FOCUS. AND YOU CAN GET CELLS FROM PLURIPOTENT CELLS THAT YOU SIMPLY CANNOT GET IN ANY OTHER WAYS.

ADVANCE THERAPEUTIC CANDIDATES USING CELLS DERIVED FROM HUMAN PLURIPOTENT CELLS. THIS IS THE WHOLE UNDERSTANDING DISEASE MECHANISM. THIS IS THE

WHOLE BEING ABLE TO USE THE ACTUAL CELL TYPE INSTEAD OF A MURINE NEURON OR SOMETHING TO SCREEN WITH DRUGS. SO THIS HAS BEEN A PRIORITY IN AT LEAST TWO OF THE FOUR.

AND THEN FINALLY, AS I NOTED IN ET I, WE ALSO FOCUSED ON BOTTLENECKS TO THE ADVANCEMENT TO THE CLINIC OF EFFECTIVE, NOVEL CELL THERAPEUTICS, PARTICULARLY THOSE THAT WERE DERIVED FROM PLURIPOTENT STEM CELLS.

I JUST WANTED TO MAKE THE POINT THAT THESE PRIORITIES HAVE, IN FACT, BEEN REFLECTED IN OUR FUNDING -- IN THE RECOMMENDATIONS OF THE GRANTS WORKING GROUP TO THIS BOARD AND IN OUR FUNDING DECISIONS. SO ROUGHLY 37 PERCENT OF THE PROJECTS AND THE DOLLARS HAVE GONE TO THE EARLY TRANSLATIONAL STUDIES ON CELL THERAPIES THAT ARE DERIVED FROM PLURIPOTENT STEM CELLS. ROUGHLY 11 TO 15 PERCENT OF THE PROJECTS AND THE DOLLARS ALLOCATED TO THIS PROGRAM HAVE GONE TO THE USE OF THE DERIVATIVES OF PLURIPOTENT STEM CELLS FOR DISCOVERY. AND THEN, AGAIN, ROUGHLY 9 PERCENT HAVE GONE TO ESSENTIALLY DEALING WITH SOME OF THE CHALLENGES PARTICULARLY FOCUSED ON PLURIPOTENT STEM CELLS.

THE OTHER 47 PERCENT OR SO HAS GONE TO OTHERS. AND, AGAIN, HERE IS THE DETAIL ON THAT FOR

YOUR INFORMATION.

OKAY. SO I JUST WANT TO GIVE YOU SORT OF A BROAD HIGHLIGHT. HOW ARE WE WORKING TO ADVANCE THE FIELD? YOU WORK TO ADVANCE THE FIELD BY PUBLISHING YOUR RESULTS. YOU TRY AND PROTECT CIRM'S INVESTMENT. OR IF YOU REALLY HAVE SOMETHING NOVEL, YOU FILE INVENTIONS. AND THEN WE'RE ALSO TRYING TO LEVERAGE. SO JUST THESE KINDS OF THINGS. AND THESE ARE ALMOST ALL DUE TO ESSENTIALLY FROM THE EARLY TRANSLATION I AND II PROGRAMS. ET III PROJECTS HAVEN'T EVEN COMPLETED THEIR FIRST FULL YEAR YET. SO THERE'S VIRTUALLY NO CONTRIBUTION FROM THIS. AND ET IV WAS JUST APPROVED BY THIS BOARD AT THEIR AUGUST MEETING, SO THEY ARE BASICALLY JUST BEING LAUNCHED.

AS YOU CAN SEE, OUR INVESTIGATORS ARE MAKING CONTRIBUTIONS TO THE FIELD. THEY ARE ADVANCING THE FIELD. THEY ARE ATTRACTING CO-FUNDING. THE EARLY TRANSLATION PROGRAM HAS ACTUALLY BEEN ONE OF THE MORE POPULAR PROGRAMS FOR COLLABORATIVE FUNDING PARTNERS. WE'VE HAD FIVE DIFFERENT PARTNERS WHO CONTRIBUTE OVER 14.3 MILLION TO 14 AWARDED PROGRAMS WHICH LEVERAGED 55 MILLION IN CIRM INVESTMENT.

THIS JUST SHOWS YOU AS A SCHEMATIC THE

STAGES IN THE RESEARCH PIPELINE COVERED BY THESE SPECIFIC TYPES OF AWARDS.

WHAT I'D LIKE TO DO NOW IS GO THROUGH THE DIFFERENT TYPES OF AWARDS AND JUST GIVE YOU BRIEFLY HIGHLIGHTS FROM EACH OF THESE PROJECTS, PARTICULARLY FOR ET I AND SOME OF THE ET IIS AS WELL.

SO BOTTLENECKS AWARDS, THERE WERE EIGHT AWARDS THAT WERE FOCUSED ON TWO CATEGORIES. ONE WAS BETTER MODELS FOR DEVELOPING OR TESTING CANDIDATE THERAPIES. THREE AWARDS FELL WITHIN THAT CATEGORY. AND THEN THE OTHER CATEGORY WAS REALLY CHARACTERIZING OR MITIGATING THE RISKS OF PSC-DERIVED CELL THERAPIES. AND THAT INCLUDED FIVE AWARDS.

SO JUST TO LOOK AT BETTER MODELS, THERE WERE THREE. AND I TALKED ABOUT SOME OF THESE A LITTLE BIT IN JANUARY. SO JUST REMIND YOU THE JACKSON LABORATORY WEST HAS ACTUALLY RELEASED THREE MODELS THAT ARE SUITABLE FOR USE OF HUMAN CELLS, AND ONE OF THESE ARE THE BEST MODELS IN MULTIPLE SCLEROSIS, PARKINSON'S DISEASE, AND TYPE 1 DIABETES. THEY NOW ARE NEAR RELEASE OF FIVE OTHER MODELS. SO THESE WILL BE AVAILABLE TO THE COMMUNITY. NOT EVERY LABORATORY HAS ACCESS TO OR HAS THE CAPABILITY. MODELS ARE ACTUALLY NOT THAT EASY TO DO IN MANY

CASES. SO NOW THEY HAVE ONES FOR MYOCARDIAL INFARCTION, STROKE, SPINAL CORD INJURY, AND TRAUMATIC BRAIN INJURY.

DR. LANGSTON OF THE PARKINSON'S INSTITUTE HAD AN AWARD WHERE, AGAIN, THE MODEL SYSTEM THERE WAS HOW DO YOU EFFECTIVELY MODEL PARKINSON'S DISEASE. HOW DO YOU DISCOVER DRUGS? AND THEY DERIVED OVER 50 LINES FROM PATIENTS THAT ACTUALLY HAD KNOWN CAUSATIVE MUTATIONS. THEY DEFINED SEVERAL NEW PHENOTYPIC READOUTS, AND THIS HAS ACTUALLY LED TO MULTIPLE NEW COLLABORATIONS, INCLUDING ONES WITH INDUSTRY AND NEW FUNDING FROM BOTH PUBLIC AND PRIVATE SOURCES.

DR. ALICE TARANTAL AT UC DAVIS HAS HAD A LONG-TERM GOAL OF TREATING INHERITED PEDIATRIC HEMATOLOGIC DISORDERS. AND SHE HAS DEVELOPED AN IN UTERO PRECLINICAL MODEL. WHAT SHE WAS INTERESTED IN DOING IS CAN I SHOW ENGRAFTMENT OF STEM CELLS AND CAN I FOLLOW THEM? AND WHAT SHE'S DONE IS SHE'S BEEN SUCCESSFUL IN DOING THIS WITH CORD BLOOD. SHE'S BEEN ABLE TO MONITOR THEM. I WOULD POINT OUT THAT THIS IS ACTUALLY THE REASON I WAS EXCITED THAT THIS AS A START AS IT SEEMED TO ME A POSSIBLE WAY OF INDUCING TOLERANCE TO A COMPARABLE CELL TYPE IF YOU HAD THE APPROPRIATE THINGS. SO SHE HAS BEEN ABLE TO

DO THAT.

THE OTHER FIVE PROJECTS IN THESE BOTTLENECK AWARDS ESSENTIALLY WERE ADDRESSED TO MITIGATING THE RISK OF PSC-DERIVED THERAPIES. WHAT WARNER GREENE AT THE GLADSTONE INSTITUTE WAS INTERESTED IN WAS ESSENTIALLY FACTORS THAT AFFECT THE STABILITY OF PLURIPOTENT DERIVED CELL LINES, PARTICULARLY IPSC DERIVED. HAVE YOU ALL HEARD OF JUMPING GENES? YOU MAY HAVE. EVERYBODY HAS IN THEIR GENOME RESIDUAL RETRO ELEMENTS THAT ACTUALLY HAVE THE CAPABILITY OF MOVING AROUND. AND THE QUESTION WAS IF DURING IPSC GENERATION, SINCE YOU'RE REALLY TOTALLY REMODELING CHROMATIN, YOU'RE CHANGING THE WHOLE ACTIVATION, DOES THIS CHANGE?

AND WHAT HE'S FOUND IS THAT HE HAS SHOWN THAT REPROGRAMMING MAY BE ASSOCIATED WITH INCREASED ENDOGENOUS RETRO-TRANSPOSITION. SO THIS IS SOMETHING THAT PEOPLE JUST NEED TO BE AWARE OF. THIS IS WHY CHARACTERIZATION OF IPSC LINES IS SO IMPORTANT.

DR. XU AT THE SCRIPPS WAS INTERESTED IN LOOKING AT IMPROVED METHODS OF GENERATING IPSC CELLS. NOW, I HAVE TO REMIND YOU, I THINK YOU ALL KNOW, THIS HAS BEEN A REMARKABLY FAST MOVING FIELD. THERE HAVE BEEN LOTS OF WORK IN THIS.

HE HAS DEVELOPED AND PUBLISHED AN IMPROVED METHOD FOR EPISOMAL, WHICH IS NONINTEGRATIVE IPS GENERATION. AND JUST TO REMIND YOU, THAT IS HOPED, THOUGHT TO BE BETTER BECAUSE WHEN YOU HAVE INTEGRATIVE, OBVIOUSLY YOU INTEGRATE IN SITES THAT COULD CAUSE PROBLEMS.

HE HAS ALSO LOOKED AT CAN I MAKE THESE DERIVATIVES OF THESE CELLS SAFER BY USING A SUICIDE GENE STRATEGY TO USE FOR PSC PURGING EITHER IN VITRO? AND HE HAS FOUND THAT, AT LEAST IN HIS HANDS, IT'S NOT WORKED AS WELL.

BUT THE WORK THAT HE'S PROBABLY BEST KNOWN FOR IS THE WORK THAT INITIATED THE DEBATE ON THE IMMUNOGENICITY OF PLURIPOTENT-DERIVED CELLS COMPARED TO ES CELLS. SO THAT HAS GENERATED A LOT OF WORK IN THE FIELD, AND I THINK HE HAS NOW COMPLETED FURTHER STUDIES, AND THAT MANUSCRIPT IS UNDER REVIEW.

DR. JEAN LORING, AGAIN AT THE SCRIPPS INSTITUTE, IN COLLABORATION WITH A PARTNER PI, DR. LASLETT, WHO IS AT MONASH UNIVERSITY IN THE STATE OF VICTORIA. WHAT THEY WERE DOING IS CAN I FIND MARKERS THAT ARE UNIQUE TO PLURIPOTENT STEM CELLS SO THAT I CAN USE THOSE EITHER FOR DETECTION AND MAYBE FOR PURGING CULTURES OF THOSE? AND THEY GENERATED A NUMBER OF ANTIBODIES, AND SHE DID THE

CHARACTERIZATION WORK AND CHARACTERIZED A LOT OF THEM THAT SEEMED TO BE SPECIFIC FOR NOVEL LIVE PLURIPOTENT STEM CELLS. THEY FOUND ONE THAT LOOKS TO BE BETTER THAN THE COMMONLY AVAILABLE ANTIBODY WITH THAT, AND THEY ARE PURSUING THAT.

MICHAEL WEST OF BIOTIME TOOK A DIFFERENT STRATEGY. HE SAID I'M GOING TO ISOLATE -- I'M GOING TO MOVE CELLS ALONG A DIFFERENTIATION PATHWAY, AND THEN I'M GOING TO CLONALLY ISOLATE, SINGLE CELL CLONALLY ISOLATE THOSE CELLS AND KEEP THEM THERE SO THAT I HAVE A LINE THAT REPRESENTS DIFFERENT STAGES. AND HE GENERATED OVER A HUNDRED LINES.

AND WHAT HE WANTED TO DO WAS SAY CAN I USE THOSE LINES, ONE, I'D LIKE TO CHARACTERIZE THEM AND CAN I SHOW THAT THEY ARE MORE EFFECTIVE OR THEY CAN USED FOR THERAPY. AND SO THE THOUGHT THERE WOULD BE THAT POSSIBLY THE RISK OF RESIDUAL PLURIPOTENT CELLS, YOU WOULD EXPECT THE RISK OF PLURIPOTENT CELLS TO BE LOWER. AND THEN ALSO CAN I USE THOSE LINES TO GENERATE UNIQUE MARKERS WHICH CAN BE USED FOR DETECTION, CHARACTERIZATION, AND AGAIN PURGING.

AND THAT IS WHAT HE HAS DONE. HE HAS SHOWN THAT OUT OF SEVERAL CHONDROGENIC LINES, HE FOUND ONE THAT ACTUALLY GAVE GOOD GENERATION OF ARTICULAR CARTILAGE. YOU CAN'T MAKE JUST ANY

CARTILAGE. YOU HAVE TO MAKE THAT ONE. AND THAT HAS BEEN PUBLISHED, AGAIN SHARED WITH THE FIELD. AND HE FOUND THAT HE COULD USE IT. HE HAS IDENTIFIED A NUMBER OF MARKERS USING A PHAGE DISPLAY TECHNOLOGY THAT HE'S PUBLISHED AND BOTH FILED A PATENT APPLICATION ON. AND THAT WAS ACTUALLY WHOLLY SUPPORTED BY CIRM.

DR. OLIVIA KELLY OF VIACYTE WAS REALLY INTERESTED, HOW DO I DEVELOP ASSAYS THAT ARE SENSITIVE ENOUGH TO DETECT RESIDUAL PLURIPOTENT CELLS IN A DIFFERENTIATED PRODUCT? WHAT SHE'S DONE IS SHE'S ACTUALLY DONE WORK TO DEVELOP BOTH IN VIVO OR IN VITRO ASSAYS. AND THIS HAS BEEN WORK DONE ALSO IN COLLABORATION WITH ED STANLEY OF MONASH UNIVERSITY, AGAIN FUNDED BY THE CFP STATE OF VICTORIA OF AUSTRALIA THAT HAS ALLOWED HER TO REALLY DEVELOP ASSAYS OF SENSITIVITY AND SPECIFICITY. AND THIS HAS BEEN PUBLISHED, AND THESE ASSAYS ARE ACTUALLY CONTRIBUTING TOWARDS THE ONGOING CIRM DISEASE TEAM AND NOW RECENTLY INITIATED STRATEGIC PARTNERSHIP I PROJECT.

NOW I'D LIKE TO SHIFT GEARS A LITTLE BIT AND TALK ABOUT THE ET I PROJECTS AND SOME OF THE ET II PROJECTS THAT HAVE BEEN TARGETING EITHER PROOF OF CONCEPT OR DEVELOPMENT CANDIDATE. THE OUTCOMES TO

DATE, AGAIN, WERE JUST FINISHING UP WITH THE -- WE FINISHED UP WITH THE ET I IN THE LAST YEAR AND ARE FINISHING -- ACTUALLY ET II, MOST OF THOSE PROJECTS ARE JUST AT THE START OF THEIR THIRD YEAR. SO TWO HAVE BEEN AWARDED DT II FUNDING, ONE HAS BEEN REVIEWED, RECOMMENDED, AND APPROVED BY THIS BOARD FOR BRIDGE FUNDING, AND FIVE SUBMITTED ELIGIBLE LETTERS OF INTENT FOR DISEASE TEAM III.

SO I'M GOING TO GO THROUGH SOME OF THESE, ALL OF THE ET IS AND ESSENTIALLY BY THERAPEUTIC AREA. AND SO I'M GOING TO START WITH THE EYE DISEASE, AND YOU WILL RECALL THAT DR. KLASSEN OF UCI, HE HAD AN EARLY TRANSLATION AWARD WHICH WAS FOR ALLOGENEIC TISSUE-DERIVED RETINAL PROGENITOR CELLS FOR THE TREATMENT OF RETINITIS PIGMENTOSA. HE ACTUALLY SUBMITTED TO AND WAS AWARDED DT FUNDING. SO YOU WILL HEAR MORE ABOUT THAT FROM DR. FEIGAL.

DR. FREIDLANDER AT THE SCRIPPS INSTITUTE WAS STUDYING AUTOLOGOUS IPS-DERIVED RPE FOR DRY AMD, A DC AWARD. WHAT HE WAS INTERESTED -- WHAT HE DID WAS HE ACTUALLY SAID I WANT A BETTER METHOD FOR DIFFERENTIATING THESE. WHAT HE DID WAS HE HAS ACTUALLY REPLACED THREE OUT OF THE FOUR YAMANAKA FACTORS WITH SMALL MOLECULES TO ESSENTIALLY GENERATE A ONE-FACTOR DERIVATION PROTOCOL FOR IPSC. HE HAS

DONE EXTENSIVE IN VITRO AND IN VIVO ANALYSIS TO COMPARE THESE TO FOUR FACTOR GENERATED IPSC TO NORMAL FETAL PROGENITORS, TISSUE STEM CELL PROGENITORS, AND HAS SHOWN THAT IT MAY BE SUPERIOR TO CLINICAL USE. AND HE HAS PUBLISHED THESE FINDINGS. HE'S NOW CONDUCTING STUDIES OF THE TECHNOLOGY WITH SKIN BIOPSIES FROM THE ACTUAL PATIENT POPULATION THAT HE'S TARGETING FOR THERAPY.

DR. TRAVIS OF UCLA WAS INTERESTED ALSO IN USING PSC-DERIVED RETINAL PIGMENTED EPITHELIUM. AND HE WAS INTERESTED IN THE NOTION OF HOW DOES INFLAMMATION PLAY A ROLE IN THE DEVELOPMENT OF THIS DISEASE? SO WAS INTERESTED IN THE NEGATIVE REGULATORS OF COMPLEMENT. HIS MAIN OUTCOME WAS HE DEFINED -- HE COMPARED, AGAIN, PSC, ESC MULTIPLE LINE AND HE DEFINED A MOLECULAR SIGNATURE FOR EVALUATING THE FIDELITY OF THE CONVERSION TO RPE. SO IF YOU ARE GOING TO MAKE SOMETHING, YOU HAVE TO BE ABLE TO SAY AT STEPS ALONG THE WAY THAT I'M GOING ALONG THE RIGHT PATH. AND STUDIES LIKE THIS HELP DEFINE THAT YOU ARE GOING ALONG THE RIGHT PATH.

HE DEMONSTRATED THAT FUNCTIONAL RPE CELLS CAN BE DERIVED FROM MULTIPLE LINES OF HESC AND HIPSC. AND HE'S PUBLISHED THIS WORK. HE'S CONTINUED OPTIMIZING HIS ESSENTIALLY RPE

DIFFERENTIATION PROCESS.

SOPHIE DENG OF UCLA HAS A DCF AWARD, AND WHAT SHE'S TRYING TO DO IS ESSENTIALLY BRING TO THE UNITED STATES -- I THINK WE'VE ALL HEARD ABOUT THE WORK THAT'S BEEN DONE IN ITALY WITH LIMBAL STEM CELL ISOLATION. AND THE ISSUE IN THE UNITED STATES IS THAT -- AND THERE'S ACTUALLY TEN YEARS OF DATA NOW AT THIS POINT SUPPORTING THE FACT THAT YOU CAN TAKE LIMBAL STEM CELLS AND YOU CAN ACTUALLY GET CORNEA. WHAT HAPPENS IF YOU DON'T HAVE THAT? YOU HAVE A BLURRY CORNEA. YOU CAN'T SEE OUT OF THE EYE. BUT THE ISSUE IN THE STATES HAS BEEN THAT THE FDA HAS WANTED A XENOBIOTIC-FREE CULTURE FOR EXPANSION. YOU NEED TO BE ABLE TO EXPAND THESE CULTURES.

SO SHE HAS DEVELOPED XENOBIOTIC-FREE CULTURE CONDITIONS FOR THE EFFECTIVE EXPANSION BASED ON MARKERS AND CRITERIA THAT HAVE BEEN SHOWN TO BE CLINICALLY RELEVANT. SHE'S NOW EXPLORING THE FUNCTIONAL IN A RABBIT MODEL, BUT SHE ACTUALLY IS VERY -- SHE BELIEVES SHE HAS OVERCOME WHAT WOULD BE THE FDA'S ISSUES WITH THAT. SO WE'LL SEE.

OKAY. IN NEURODEGENERATIVE DISEASE, I'M GOING TO TALK ABOUT PROGRAMS IN ALZHEIMER'S DISEASE, HUNTINGTON'S DISEASE, AND PARKINSON'S DISEASE. OUR PROGRAM IN ALZHEIMER'S DISEASE, AS YOU KNOW, LAFERLA

AT UCI WAS WORKING WITH ALLOGENEIC ESC OR TISSUE-DERIVED NSC, A DC AWARD. AND HIS WORK CONTRIBUTED -- HE COLLABORATED WITH STEM CELLS, INC. HIS WORK ACTUALLY CONTRIBUTED TO THE DISEASE TEAM FUNDING THAT WAS AWARDED TO STEM CELLS, INC. AS PART OF THEIR DISEASE TEAM II AWARD.

DR. JAN NOLTA AT UC DAVIS WAS WORKING WITH ALLOGENEIC HMSC THAT HAD BEEN ENGINEERED EX-VIVO TO DELIVER AN SIRNA TO SILENCE EXPRESSION OF MUTANT HUNTINGTON MRNA FOR THE TREATMENT OF HUNTINGTON'S DISEASE. THE REASON MSC'S ARE PERCEIVED AS POTENTIAL CELL DELIVERY VEHICLES, THEY TEND TO TARGET AREAS OF INFLAMMATION. AND SO THIS SEEMED TO BE A STRATEGY THAT SHE THOUGHT -- THAT THEY THOUGHT, THAT THAT TEAM THOUGHT COULD DO SOMETHING. ONE OF THE KEY ISSUES IN THAT FIELD HAS BEEN HOW DO YOU DELIVER, HOW DO YOU GET THIS INTO THE CELL?

AND WHAT SHE SHOWED WAS IN IN VITRO MODEL SYSTEMS THAT THERE COULD BE REDUCTION OF THE MUTANT HUNTINGTON PROTEIN IN THE RECIPIENT CELL POPULATION DUE TO TRANSFER OF THE ANTI-HTT SIMRNA FROM THE MSC. AND THEY'RE EXPLORING THE MECHANISM OF THIS. SHE'S PUBLISHED THIS AND A PATENT APPLICATION HAS BEEN FILED.

DR. LESLIE THOMPSON OF UC IRVINE IS

LOOKING AT ALLOGENEIC HESC-DERIVED NSC. SHE WAS EXPLORING THREE DIFFERENT PROGENITOR POPULATIONS, THE NEURAL STEM CELL POPULATION, THE ASTROCYTE PROGENITOR POPULATION, OR THE NEURAL PROGENITOR POPULATION AS THE BEST SOURCES FOR HUNTINGTON'S DISEASE. SHE HAS SELECTED NEURAL STEM CELLS, HAS SUCCESSFULLY DIFFERENTIATED FROM A GMP-COMPATIBLE HESC CELL LINE, HAS SHOWN NEUROLOGIC AND BEHAVIORAL IMPROVEMENT IN A MOUSE MODEL OF HUNTINGTON'S DISEASE. SHE'S DOING FULL CHARACTERIZATION OF THOSE IN VIVO AND IN VITRO STUDIES AND IS CONDUCTING DOSING STUDIES AT THIS TIME.

MR. SHEEHY: COULD I ASK A QUESTION ABOUT THIS? SO DR. THOMPSON WAS AT OUR LAST MEETING SEEKING ADDITIONAL FUNDING TO CONTINUE THIS WORK. SHE DID NOT FARE WELL IN EARLY TRANSLATION III IN ORDER TO CONTINUE THE WORK THAT WE'RE SAYING WAS PROCEEDING SUCCESSFULLY.

DR. OLSON: NO. THAT WAS FOR A DIFFERENT PROJECT.

MR. SHEEHY: THANK YOU. THAT HELPS.

DR. OLSON: SHE IS MAKING PROGRESS OBVIOUSLY.

MR. TORRES: WHO ARE THE ITALIANS THAT YOU REFERENCE? IS THAT MILAN, BOLOGNA, OR ROME?

DR. OLSON: I'M EMBARRASSED TO SAY I WILL HAVE TO GET THE NAME FOR YOU. IT'S NOT -- IF DR. ABO WERE HERE, HE'D KNOW IT RIGHT OFF.

MR. TORRES: THANKS, PAT. DON'T WORRY ABOUT IT.

DR. OLSON: HE'S SPOKEN AT ISSCR. I SHOULD KNOW. GIVE ME A FEW MINUTES AND IT MAY COME TO ME.

OKAY. IN PARKINSON'S DISEASE WE ARE IN ET I AND II. WE ARE FUNDING THREE PROGRAMS. DR. EVAN SNYDER AT THE SANFORD BURNHAM, HE IS PURSUING ALLOGENEIC COMMITTED NEURAL PROGENITORS DERIVED FROM ESC, IPSC, OR TISSUE. HE WAS LOOKING TO PICK THE BEST OF THEM. HE WAS TESTING THEM IN A VERY RELEVANT PRECLINICAL MODEL. AND BASED ON HIS STUDIES TO DATE, HE STARTED LATE, BY THE WAY, HE HAS SELECTED GENETICALLY MODIFIED HSC LINES BASED ON COMPARATIVE STUDIES. HE HAS MADE A RESEARCH WORKING BANK. HE IS DEVELOPING OPTIMAL CELL PREPARATION STRATEGIES. HE HAS EXTENSIVE CHARACTERIZATION AND HISTOLOGICAL DATA.

DR. SHAMIN ZENG OF THE BUCK INSTITUTE IS PURSUING A STRATEGY WITH, AGAIN, ALLOGENEIC HUMAN PLURIPOTENT STEM CELL-DERIVED DOPAMINERGIC NEURAL PRECURSOR CELLS. THIS IS ALSO A DC AWARD. SHE ALSO

WAS EXPLORING SEVERAL DIFFERENT LINES.

DR. PELEGRINI OF MILAN.

SHE EXPLORED SEVERAL DIFFERENT PLURIPOTENT LINES AND SELECTED A LEAD AND A BACKUP LINE AS A SOURCE FOR THESE NEURAL PRECURSOR CELLS. SHE HAS MADE RESEARCH WORKING CELL BANKS AND DEVELOPED A SCALABLE GMP-COMPATIBLE PROCESS AND SHOWED COMPARABILITY BY VARIOUS IN VITRO ASSAYS AND IN VIVO ASSAYS TO THAT DEVELOPED BY A RESEARCH SCALE PROCESS.

DR. FRED GAGE OF THE SALK INSTITUTE IS ONE OF THESE PEOPLE THAT'S INTERESTED IN THE INTERSECTION OF NEURODEGENERATIVE DISEASE AND INFLAMMATION. HE HAS A DCF AWARD WHERE HE'S LOOKING AT PATIENT IPSC-DERIVED, A CO-CULTURE SYSTEM. HE WANTS TO PUT NEURONS TOGETHER AND ASTROCYTES TO IDENTIFY ANTI-INFLAMMATORY SMALL MOLECULES AGAINST A TARGET THAT HE HAS VALIDATED AS BEING IMPORTANT IN THIS.

SO HE'S LOOKING FOR NEUROPROTECTIVE MARKERS, AND HE WANTS TO CORRELATE ACTIVITY IN THIS ASSAY WITH PATIENT DATA FROM HIS PARTNER PI, JORGAN WINKLER IN GERMANY WHO'S FUNDED BY THE BMBF. WHAT THEY HAVE DONE IS THEY'VE RECEIVED NOW, THEY'VE MADE -- THEY'VE RECEIVED FIBROBLASTS, I BELIEVE,

FROM OVER TEN PATIENTS THAT ARE CLINICALLY WELL CHARACTERIZED. SO THIS CAN BE VERY VALUABLE. THEY'VE MADE IPSC LINES. THEY'VE GOT THE CO-CULTURE SYSTEM UNDER DEVELOPMENT. THE ASTROCYTES ARE PROVING TO BE A BIT OF A CHALLENGE. AND SO THEY'RE WORKING ON OPTIMIZING ASTROCYTE DIFFERENTIATION, BUT HE TELLS THE SCIENCE OFFICER THEY'RE VERY CLOSE.

DR. INDER VERMA OF THE SALK INSTITUTE, HE HAS AN ET I AWARD THAT WAS TARGETING A BLOOD DISORDER. PARTICULARLY HE WAS INTERESTED IN AUTOLOGOUS IPSC HSC GENETICALLY CORRECTED EX VIVO BY HOMOLOGOUS RECOMBINATION TO TREAT FANCONI'S ANEMIA AND X-SCID. HE DEVELOPED IPS LINES FROM THESE PATIENTS, GENERATED PRECLINICAL MOUSE MODELS FOR TESTING THEM, WAS ABLE TO DO THE GENE CORRECTION IN THE IPSC LINES, HOMOLOGOUS RECOMBINATION.

MANY OF YOU MAY KNOW DR. VERMA IS WELL KNOWN FOR VECTOROLOGY MOLECULAR BIOLOGY. HE DID DEVELOP AND DEMONSTRATE A ROBUST AND REPRODUCIBLE METHOD FOR THE EFFICIENT GENERATION OF MULTIPOTENT HEMATOPOIETIC PROGENITOR CELLS IN SHORT-TERM ENGRAFTMENT STUDIES. AS YOU HEARD FROM DR. FEIGAL, THE BIG DEAL IN THIS FIELD IS LONG-TERM ENGRAFTMENT. SO THIS HAS JUST BEEN A MAJOR CHALLENGE. SO HE HAS THE MODELS AND THE LINES, AND HE'S NOW CURRENTLY --

HE'S PUBLISHED THIS. HE'S USING THE TECHNOLOGY HE'S DEVELOPED FOR HOMOLOGOUS RECOMBINATION IN OTHER PROJECTS, INCLUDING AN ET III.

WITHIN THE BONE DISORDERS, DR. LONGAKER AND CO-PI HELMS OF STANFORD UNIVERSITY ARE PURSUING DEVELOPMENT OF A STABLE FORMULATION OF WNT3A FOR EX VIVO USE IN COMBINATION WITH BONE MARROW ASPIRATE FOR AUTOLOGOUS BONE REPAIR. THEY DEVELOPED A CELL LINE, METHODS, AND ASSAYS FOR RESEARCH PRODUCTION AND PURIFICATION, DEMONSTRATED THAT TREATMENT WAS STABLE, PRODUCT WAS SUFFICIENT TO STIMULATE OSTEOGENIC GENE EXPRESSION, AND TO GENERATE SIGNIFICANTLY MORE BONE IN FOUR PRECLINICAL MODELS AND COMPARED TO AVAILABLE TREATMENT OPTIONS, AND WAS NOT ASSOCIATED WITH ANY ADVERSE REACTIONS. PATENT APPLICATIONS HAVE BEEN FILED AND THIS WORK HAS BEEN PUBLISHED. IT WAS ALSO REVIEWED AND RECOMMENDED AND APPROVED FOR BRIDGING FUNDING.

DR. BRUNO PEAULT AND DR. SHIA SOO FROM UCLA WERE PURSUING A STRATEGY FOR AUTOLOGOUS ADULT PERIVASCULAR STEM CELLS, WHICH IS AN MSC-TYPE CELL, IN COMBINATION WITH AN OSTEOINDUCTIVE PROTEIN ON AN FDA APPROVED ACELLULAR SCAFFOLD FOR BONE REPAIR. THEY'VE SHOWED IN PRECLINICAL MODELS IMPROVED CAPACITY FOR HIGH QUALITY BONE FORMATION OVER

CONTROLS, DEVELOPED PROCESSES FOR THE REPRODUCIBLE ISOLATION OF THE PSC OF THE ADULT PERIVASCULAR STEM CELLS, AND A CELL LINE AND PROCESS FOR SCALABLE GMP-COMPATIBLE ISOLATION OF THE OSTEOINDUCTIVE PROGRAM.

DR. DAN GAZIT OF CEDARS-SINAI, WHO DR. ARI ABO AND I WILL BE MEETING WITH TOMORROW, ARE PURSUING AN ALLOGENEIC MSC STRATEGY PLUS OR MINUS PARATHYROID HORMONE FOR BONE REPAIR TO TREAT OSTEOPOROSIS-RELATED VERTEBRAL COMPRESSION FRACTURES. THIS WAS A DCF AWARD. THEY'VE DEVELOPED MODELS AND SYSTEMS TO MONITOR THE HOMING. PTH IS BELIEVED TO IMPROVE THE HOMING. AND THEY'VE SHOWED ENHANCED HOMING AND FRACTURE REPAIR COMPARED TO CONTROLS.

CARTILAGE DISORDERS, THE CHALLENGE HERE IS ACTUALLY YOU CAN MAKE CARTILAGE, BUT YOU HAVE TO MAKE THE RIGHT KIND OF CARTILAGE. YOU CAN'T MAKE FIBROUS CARTILAGE. YOU HAVE TO MAKE ARTICULAR CARTILAGE. AND SO THIS IS SOMETHING THAT DR. D'LIMA OF SCRIPPS RESEARCH INSTITUTION HAS BEEN INTERESTED IN. AND HIS TARGET THERAPY IS A CHONDROCYTE PROGENITOR EMBEDDED IN A SCAFFOLD AND PLANTED INTO A DEFECT OR A JOINT TO ESSENTIALLY DELAY KNEE REPLACEMENT AS MUCH AS POSSIBLE. HE OPTIMIZED THE

DIFFERENTIATION CONDITIONS, DEVELOPED CHARACTERIZATION, DEVELOPED AN OPTIMIZED CHARACTERIZATION ASSAY, AND EXPLORED A LOT OF SCAFFOLD COMPONENTS TO GET THE BEST CHONDROGENIC POTENTIAL AND IMPROVED TISSUE QUALITY. HE SELECTED AN ESC CELL LINE SOURCE BASED ON HISTOLOGICAL CRITERIA AND FUNCTION IN IN VIVO AND IN VITRO MODELS, AND HAS CONDUCTED A PILOT SAFETY ASSESSMENT.

A VERY DIFFERING APPROACH IS BEING PURSUED BY DR. PETER SCHULTZ OF THE SCRIPPS INSTITUTE. HE HAD FOUND IN A SCREEN THAT A SMALL MOLECULE COMPOUND PRO1 HAD SOME INDUCED CHONDROCYTE DIFFERENTIATION OF RESIDENT HMSC. AND SO IT DIDN'T HAVE SOME OF THE CHARACTERISTICS THAT YOU WOULD WANT FOR A SMALL MOLECULE IF YOU ARE GOING TO USE IT FOR TREATMENT OF OSTEOPOROSIS. SO WHAT HE IS DOING IS HE'S DOING THE MEDICINAL CHEMISTRY AROUND THAT, AND HE'S DEVELOPED THE ASSAYS, PERFORMED THE STRUCTURE ACTIVITY RELATIONSHIPS STUDIES. HE'S MADE SEVERAL HUNDRED PRO1 ANALOGS, IDENTIFIED MOLECULES WITH IMPROVED ACTIVITY IN CELL CULTURE AND IN RELEVANT MODELS, AND IS SYNTHESIZING A FINAL SERIES OF MOLECULES BASED ON THAT PROFILE WITH RESPECT TO ACTIVITY, PK, AND SAFETY PRIOR TO ACTUAL CANDIDATE SELECTION.

SO WHAT I'VE DONE IS I'VE TOLD YOU ABOUT

THE 16 ET I PROJECTS AND EIGHT OF THE 20 ET II PROJECTS. WHAT I'D LIKE TO DO IN FUTURE MEETINGS IS UPDATE YOU ON THE OTHERS OF THOSE AS FAR AS OTHERS. SO I'LL LOOK FORWARD TO TALKING TO YOU.

CHAIRMAN THOMAS: THANK YOU, DR. OLSON. A TIME OUT FOR THE LONG SUFFERING REPORTER. WE'LL RECONVENE IN ABOUT FIVE MINUTES.

(A BREAK WAS THEN TAKEN.)

CHAIRMAN THOMAS: MEMBERS OF THE BOARD, COULD YOU PLEASE TAKE YOUR SEATS. I THINK WE'RE READY TO RESUME. EVERYBODY PLEASE TAKE YOUR SEATS.

DR. OLSON: WHILE PEOPLE ARE TAKING THEIR SEATS, DR. ZENG XU MAY BE SURPRISED TO HEAR THAT HIS AFFILIATION HAS CHANGED. SO I'VE HAD TWO PERSONS AT LEAST COME UP TO ME, AND I JUST WANT TO MAKE THE CORRECTION. DR. ZENG XU, TR 1-01277, IS ACTUALLY AT UCSD AND NOT AT THE SCRIPPS.

CHAIRMAN THOMAS: THANK YOU, DR. OLSON. JOAN, YOU HAD A QUESTION FOR DR. OLSON?

MS. SAMUELSON: I THINK IT'S A SERIES OF QUESTIONS, AND I DON'T THINK THERE'S TIME NOW TO GET TO THE BOTTOM OF THEM, IF IT'S EVEN POSSIBLE. LET ME JUST MAKE A COMMENT.

I TAKE IT THAT THIS IS THE BODY OF WORK THAT PROP 71 FUNDS WERE SET ASIDE TO DEVELOP AND

THIS IS IT. IS THAT RIGHT? AND WE'RE WATCHING. I'M TRYING TO UNDERSTAND IS THIS EVOLVING OR IS IT --

DR. OLSON: NO.

MS. SAMUELSON: -- A DIFFERENT SLIDE OF A MUCH LARGER BODY OF WORK?

DR. OLSON: NO. WHAT I WAS TRYING TO DO IN AT LEAST MY DISCUSSION WAS FOCUS ON ONLY THE EARLY TRANSLATIONAL I PROJECTS AND SOME THAT WERE IN THE SAME THERAPEUTIC AREAS FOR THE EARLY TRANSLATIONAL II AWARDS.

THERE ARE OBVIOUSLY OTHER PROJECTS IN BOTH ET II THAT I DID NOT DISCUSS, NOR IN ET III. AND THAT'S SIMPLY BECAUSE I WANTED TO ALLOW DR. FEIGAL TO HAVE A CHANCE TO TALK ABOUT THE DISEASE TEAM AND STRATEGIC PARTNERSHIP PROGRAMS, PLUS, YOU KNOW, SOME OF THE PROGRAMS ARE NOT WELL ENOUGH ALONG TO DISCUSS ANY KIND OF OUTCOME. I THINK WE PROVIDE THIS BOARD AT EVERY REVIEW WHERE WE MAKE FUNDING DECISIONS ON A TRANSLATIONAL PORTFOLIO PROGRAM THE LIST OF ALL THE PROJECTS AND THE APPROACHES IN A SPECIFIC DISEASE AREA. I'M ALSO HAPPY TO ANSWER ANY QUESTIONS INDIVIDUALLY.

MS. SAMUELSON: WELL, YOU NAMED THREE IN PARKINSON'S. DOES THAT MEAN THERE'S MORE ET GRANT

FUNDED PARKINSON'S-SPECIFIC OR RELATED WORK?

DR. OLSON: I THINK SO, BUT MY MIND IS A LITTLE BIT --

MS. SAMUELSON: I DON'T MEAN TO PUT YOU ON THE SPOT. I'M JUST TRYING TO UNDERSTAND WHERE AND WHEN DOES THE BOARD ENGAGE IN THIS CONVERSATION BECAUSE WE HAVE A FIDUCIARY DUTY TO BE INVOLVED, AND IT'S HARD TO KNOW. BUT PUT ASIDE MY EDITORIAL COMMENT. MY ORIGINAL QUESTION, ARE THERE MORE ET-FUNDED PARKINSON'S PROJECTS?

DR. OLSON: IF YOU WAIT ONE MINUTE, I WILL VERIFY THAT FOR YOU.

DR. FEIGAL: JOAN, CAN I JUST MAKE A COMMENT?

MS. SAMUELSON: YEAH.

DR. FEIGAL: THERE'S GOING TO BE AN OPPORTUNITY FOR A LONGER DISCUSSION IN DECEMBER AT THE BOARD WORKSHOP. WHAT WE WERE TRYING TO DO HERE IS GIVE YOU A PROGRESS UPDATE ON THOSE PROGRAMS THAT ARE MATURE ENOUGH TO HAVE SOME OUTCOMES. SO WHAT DR. OLSON DID, WE HAVE FOUR ITERATIONS ACTUALLY OF EARLY TRANSLATION PROGRAMS. WE'VE A TOTAL OF ABOUT 70 DIFFERENT PROGRAMS, ABOUT 50 IN EARLY TRANSLATION, ABOUT 21 IN THE DEVELOPMENT, WHICH IS FARTHER DOWN THE DEVELOPMENT PATHWAY. AND SO JUST

FOR REASONS OF TIME, THERE REALLY ISN'T A CHANCE FOR HER TO GO INDIVIDUALLY THROUGH EACH OF 50 DIFFERENT PROJECTS. SO WHAT SHE TRIED TO DO IS GIVE YOU AN UPDATE ON THOSE THAT ARE MATURE ENOUGH TO HAVE SOME OUTCOMES OF INTEREST. AND THEN WHAT WE CAN DO IS SEND YOU AN UPDATED PORTFOLIO OF ALL THE TABLES THAT LIST THE PROJECTS AND PERHAPS WHEN THEY WERE FUNDED SO YOU CAN SEE WHEN THEY STARTED AND WHEN WE MIGHT EXPECT SOME RESULTS. I DON'T KNOW IF THAT ANSWERS YOUR QUESTION, BUT I TRIED.

MS. SAMUELSON: I'M NOT SURE EITHER. OKAY. THANKS. OKAY.

CHAIRMAN THOMAS: OKAY. THANK YOU. ANY OTHER QUESTIONS OF DR. OLSON? THANK YOU VERY MUCH, PAT. THAT WAS VERY INFORMATIVE. THANK YOU.

NOW WE GO TO DR. FEIGAL FOR DISCUSSION ON DISEASE TEAMS AND THE STRATEGIC PARTNERSHIPS.

DR. FEIGAL: NOW WHAT WE'RE GOING TO TALK ABOUT ARE THOSE PROJECTS FOR GETTING BEYOND THE CURING MICE AND WORKING IN THE LABORATORY AND TRYING TO GET AT THOSE ISSUES THAT THE CITIZENS OF CALIFORNIA ASKED FOR WHEN THEY WERE THINKING ABOUT THIS INSTITUTE AND HOW DO WE ADVANCE THIS SCIENCE INTO PATIENTS WITH CHRONIC DISEASE AND INJURY BECAUSE OF THE PROMISE OF THIS TYPE OF TECHNOLOGY,

AND IT'S ACTUALLY A VERY BROAD TECHNOLOGY.

IT STARTED WITH HUMAN INDUCED -- HUMAN EMBRYONIC STEM CELL-DERIVED PROGRAMS, BUT HAS EXTENDED AS THE SCIENCE HAS MATURED AND EVOLVED TO A BROAD PLATFORM OF OTHER TYPES OF PLURIPOTENT STEM CELLS, OTHER TYPES OF ADULT STEM CELL TISSUES, IN ADDITION TO THINKING ABOUT THOSE MECHANISMS OF ACTION WHERE STEM CELL TECHNOLOGY CAN HELP REPAIR, REGENERATE, OR REPLACE DISEASED OR DAMAGED TISSUE.

IN ADDITION, THERE'S A COMPONENT OF WHAT WE DO THAT'S RELEVANT FOR STEM CELLS IN THE CANCER STEM CELL SPACE. AND SOMETIMES WE LOOK AT PROJECTS AND WE REALLY NEED TO MAKE VERY, VERY SURE THAT THERE'S A CLEAR CONNECTION TO THE CANCER STEM CELL WITH SEVERAL OF THESE APPROACHES BECAUSE THE APPROACHES ON THE CANCER STEM CELLS ARE REALLY GETTING AT HOPEFULLY THE ACHILLES HEEL OF CANCER AND COULD REPRESENT A NEW WAY OF APPROACHING TREATMENT.

SO WHAT I'D LIKE TO DO IN THIS TAG TEAM PRESENTATION IS TALK ABOUT THOSE 21 DIFFERENT PROGRAMS THAT ARE FURTHER DOWN THE DEVELOPMENT PATHWAY TO GO INTO PATIENTS. SO THE TWO INITIATIVES THAT WE HAVE IN PLACE, ONE WAS STARTED IN 2010 AND THE OTHER WASN'T STARTED TILL 2012, ARE THE DISEASE TEAM PROGRAMS AND THE STRATEGIC PARTNERSHIP PROGRAM.

SO WE'RE ONLY THREE YEARS INTO THE INITIAL FUNDING OF SOME OF THESE DEVELOPMENT TEAMS.

AND HERE WHAT WE'RE REALLY TRYING TO DO IS MAKE SURE THAT WE'VE ENABLED THE PRECLINICAL DEVELOPMENT TO MOVE THESE PROGRAMS AND PROJECTS DOWN INTO CLINICAL TRIALS FOR PATIENTS. AND THIS IS AN AREA THAT'S OFTEN UNDERFUNDED. IT'S WHAT'S CALLED THE VALLEY OF DEATH OR WHAT WE SOMETIMES CALL THE BRIDGE TO CURES WHERE THERE'S REALLY NOT SUFFICIENT FUNDING TO WORK ON THESE TYPES OF PROGRAMS. AND SO CIRM IS REALLY, IN ADDITION TO FILLING THE NICHE OF FOCUSING ON A STEM CELL TECHNOLOGY, REALLY FOCUSING ON A REAL GAP IN WHAT OTHER PEOPLE FUND. WHAT WE'RE TRYING TO DO IS THE HIGH RISK TYPE OF RESEARCH THAT PROVIDES THE EVIDENCE TO MAKE THESE PROGRAMS AND PROJECTS ATTRACTIVE TO INVESTORS OR COMPANIES SO THAT THEY DO HAVE THE POTENTIAL TO MOVE FORWARD.

SO THESE INITIATIVES REALLY FOCUSED ON FILING AN IND SO THAT THESE PROGRAMS CAN ENTER THE FIRST-IN-HUMAN CLINICAL TRIALS OR TAKING THEM ALL THE WAY THROUGH EARLY PHASE CLINICAL TRIALS.

SO HERE WHAT WE REALLY WANT TO DO WITH COMPLETION OF A CLINICAL TRIAL IS REALLY FOCUSING ON THOSE THINGS WHERE THEY CAN ESTABLISH A FEASIBLE DOSE, A DELIVERY THAT'S SAFE, WITH SOME EVIDENCE OF

BIOLOGIC ACTIVITY, AND/OR SOME CLINICAL PARAMETERS OF EFFICACY FOR THE PATIENT.

THIS IS JUST A SNAPSHOT OF WHERE WE ARE AT THIS POINT IN TIME WITH ALL OF OUR TRANSLATIONAL PROGRAMS. SO IF YOU LOOK AT THE YEAR IN WHICH, LET'S SAY, THE EARLY TRANSLATION PROGRAMS, WHICH DR. OLSON JUST WENT THROUGH, WE HAD EIGHT IN THE COHORT OF 2009, 21 IN THE COHORT OF 2011, AND 21 IN THE YEAR 2012, AND THEN WE HAVE ANOTHER COHORT OF APPROXIMATELY 13 THAT WAS JUST RECENTLY FUNDED. SO OF THOSE EARLY COHORTS, '09 AND REALLY '11 IS STILL PRETTY EARLY BECAUSE THESE ARE THREE-YEAR AWARDS, ONE OF THEM FROM 2009 WAS AWARDED A DISEASE TEAM TO ADVANCE TOWARDS AND INTO THE CLINIC. AND TWO OF THEM FROM THAT SAME COHORT PUT IN LETTERS OF INTENT AND APPLICATIONS FOR THE DISEASE TEAM III COHORT. SO THERE IS SOME EVIDENCE OF ADVANCING THESE PROGRAMS FURTHER ALONG THE MATURATION PATHWAY.

AND FROM 2011 SO FAR, AND THESE ARE THREE-YEAR AWARDS, ONE OF THOSE 21 WAS AWARDED A DISEASE TEAM AWARD. SO THEY WERE ABLE TO SUCCESSFULLY COMPLETE THEIR ET COMPONENT AND THEN MOVE ON BECAUSE WHAT WE'RE TRYING TO DO IS HAVE A SEAMLESS PATHWAY. WE DON'T WANT THERE TO BE GAPS IN FUNDING. SO WE'RE TRYING TO TIME OUR INITIATIVES SO

THAT THERE'S ACTUALLY A PATHWAY WHERE THEY CAN GET FUNDING.

IN 2012 IT'S MUCH TOO EARLY TO SEE RESULTS THERE. AND THEN WITH OUR DEVELOPMENT TEAMS, AND THESE ARE THE DISEASE TEAMS AND THE STRATEGIC PARTNERSHIPS, THEY'RE ADVANCING THROUGH THEIR PRE-IND FDA MEETINGS AND THEY'RE ENTERING CLINICAL TRIALS. SO IN THE FIRST COHORT THAT'S ONLY THREE YEARS DOWN THE ROAD FROM THEIR FUNDING IN 2010, OVER 50 PERCENT OF THOSE TEAMS HAVE HAD SUCCESSFUL INTERACTIONS WITH THE FDA. AND THAT'S THE AGENCY THAT REVIEWS AND APPROVES WHETHER OR NOT THESE PRODUCTS CAN GET INTO HUMAN AND ULTIMATELY WHETHER OR NOT THIS CAN GET INTO THE MARKETPLACE.

OVER 50 PERCENT OF THAT FIRST COHORT IS SUCCESSFULLY TRACKING ALONG. TWO OF THOSE HAVE ALREADY FILED IND'S IN 2012, AND SIX ARE EXPECTED TO FILE IND'S IN 2013 AND 14. AND TWO OF THAT FIRST COHORT ARE IN CLINICAL TRIALS THIS YEAR. IT'S TOO EARLY FOR THE SUBSEQUENT COHORTS. THEY'RE ONLY IN THEIR VERY FIRST YEAR OF FUNDING, BUT I WILL MENTION THEM SO THAT YOU GET A SENSE OF WHERE WE ARE IN THE PORTFOLIO EVEN THOUGH IT'S TOO EARLY TO REALLY SEE OUTCOMES FROM THEM.

CHAIRMAN THOMAS: ELLEN, ON THAT SLIDE,

DOES THAT MEAN, GIVEN THE NUMBER WE EXPECT TO GET IND'S NEXT YEAR, ALSO THAT WE WILL HAVE EIGHT IN CLINICAL TRIALS BY THE END OF CALENDAR '14?

DR. FEIGAL: NO. WHAT WE SAID IN OUR STRATEGIC PLAN IS THAT WE EXPECT TO HAVE THREE TO FIVE IN CLINICAL TRIALS. SO SOME OF THESE MIGHT BE AN OVERLAP OR MIGHT HAVE OTHER SOURCES OF FUNDING. IT'S POSSIBLE THAT IF ALL OF THEM SUCCESSFULLY GO THROUGH, THAT'S A POSSIBILITY. BUT AT THIS POINT IN TIME, FOR OUR GOAL WE SAID WE EXPECT BETWEEN THREE AND FIVE, BUT IT'S POSSIBLE IT COULD BE MORE. IT'S ONE THING TO SUCCESSFULLY GET THROUGH THE REGULATORY NAVIGATION PATHWAY. SCIENCE EVOLVES AND CHANGES, AND IT'S A SECOND QUESTION AS TO WHETHER OR NOT WHAT WAS A GREAT IDEA IN 2010 IS STILL A GREAT IDEA IN 2014. SO EVEN THOUGH IT MAY HAVE SUCCESSFUL PASSAGE, IT IS A QUESTION WHETHER OR NOT IT'S STILL SOMETHING THAT WE WANT TO CONTINUE TO INVEST IN. BUT THEY'RE CERTAINLY PROCEEDING DOWN THE PATHWAY AND BEING SUCCESSFUL THERE.

FROM THE DISEASE TEAM I, THOSE ARE 14 PROJECTS IN THAT FIRST COHORT, AND THEY WERE FUNDED, THAT FIRST COHORT, WITH A GOAL OF FILING AN APPROVABLE IND BY THE END OF THE PROJECT PERIOD IN 2014. TWO OF THEM HAVE ALREADY FILED THE IND'S.

THEY'RE CONDUCTING CIRM-FUNDED CLINICAL TRIALS IN 2013. ONE IS IN HIV. THAT'S THE CAL-IMMUNE CLINICAL TRIAL THAT JEFF SHEEHY ALLUDED TO FROM HIS HIV CURE WORKSHOP WHERE HE HAD LOUIS BRETON AS PART OF THE PANEL. HE'S THE CEO OF THAT COMPANY PRESENTING THEIR WORK. AND THEN WE ALSO AWARDED A DT II TO A COMPANY THAT'S MOVING ON THEIR DT I PROJECT AND SUCCESSFULLY APPLIED AND RECEIVED DT II FUNDING. AND THAT PROJECT IS IN THE CLINICAL TRIAL RIGHT NOW FOR PATIENTS WITH A RECENT HEART ATTACK AND EVIDENCE OF CONGESTIVE HEART FAILURE.

OVER HALF THE DT I PROJECTS HAVE SUCCESSFULLY ADVANCED THROUGH THEIR PRE-IND MEETING WITH THE FDA. ONE WAS APPROVED FOR STRATEGIC PARTNERSHIP FUNDING, AND THAT'S THE VIACYTE AWARD THAT SUCCESSFULLY IS MOVING THROUGH EARLY TRANSLATION DISEASE TEAM I AND NOW A STRATEGIC PARTNERSHIP I. ONE RECEIVED SUPPLEMENTAL EXTERNAL FUNDING. TWO WERE RECOMMENDED AND APPROVED FOR A CIRM MAJOR SUPPLEMENT FUNDING TO THE TUNE OF $3 MILLION EACH. AND SIX SUBMITTED ELIGIBLE LETTERS OF INTENT FOR THE DISEASE TEAM III RECENT SOLICITATION.

THE DISEASE TEAMS II AND THE STRATEGIC PARTNERSHIPS ARE JUST NOW GETTING STARTED, AND THEY'RE IN THEIR FIRST YEAR OF AWARD.

I'M GOING TO GO THROUGH SOME OF THE CONTENT OF WHAT'S BEING DONE IN THESE DIFFERENT PROJECTS. BY THE NATURE OF THESE AWARDS, THERE'S A LOT OF PROPRIETARY AND CONFIDENTIAL INFORMATION. IF THERE'S INTEREST IN DIVING FURTHER, SOME OF THIS WILL HAVE TO BE DONE IN CONFIDENTIAL SESSION. WHAT I TRIED TO DO HERE IS WHAT COULD BE PUBLICLY AVAILABLE.

SO I CAPTURED THIS BY DISEASE AREA. AND, JOAN, JUST FOR YOUR QUESTION, THIS DOES CAPTURE ALL OF THE DISEASE TEAMS AND EITHER COHORTS ONE OR TWO OF DISEASE TEAM AND COHORTS ONE AND TWO OF STRATEGIC PARTNERSHIP. SO THIS IS THE PORTFOLIO OF THE DEVELOPMENT TEAMS.

SO THE FIRST ONE IS THE MARBAN TEAM THAT WAS AT CEDARS-SINAI.

MS. SAMUELSON: CAN YOU, THEN, WITH EACH ONE YOU'RE DESCRIBING, NOTE THE DISEASE AREA? AND I GUESS THAT'S IT. YEAH. BECAUSE YOU SAID THIS IS THE TOTAL PART OF OUR PORTFOLIO.

DR. FEIGAL: AT THIS POINT IN TIME. SO WE JUST HAD A REVIEW FOR THE THIRD COHORT OF DISEASE TEAMS, AND WE WILL HAVE A REVIEW IN FEBRUARY OF THE THIRD COHORT OF STRATEGIC PARTNERSHIPS.

MS. SAMUELSON: BUT THERE MAY BE SOME

ADDED TO THE DISEASE TEAM PORTFOLIO, FOR EXAMPLE, AS SOMETHING ELSE ADVANCES, BUT IT'S JUST GOING TO BE THOSE THAT ARE IN THE PIPELINE AT THIS POINT PRETTY MUCH, RIGHT, GIVEN THE RAPIDITY OF OUR SPENDING AND THE TIME FRAME WE'RE LOOKING AT?

DR. FEIGAL: IT DEPENDS ON THE MATURATION AT WHICH THEY ENTER. SO WE HAVE THINGS IN OUR ENDOGENOUS PIPELINE, AND THEN WE HAVE THINGS THAT CAN ENTER EXTERNALLY THAT MAY NOT HAVE BEEN NURTURED ALONG THE WAY BY CIRM. SO IT STILL DOES DEPEND ON THE MATURATION OF WHAT MIGHT COME IN.

MS. SAMUELSON: FOR THOSE THAT FELL OUT EARLIER ARE NOT GOING TO BE ABLE TO BE REESTABLISHED, RIGHT?

DR. FEIGAL: IF THOSE WHO FELL OUT EARLIER, THERE WAS ONE THAT WAS TERMINATED, TWO THAT WENT BACK TO AN EARLY TRANSLATION AWARD. IT DEPENDS ON HOW THEY DO WITH THEIR EARLY TRANSLATION AWARD IN TERMS OF THE TYPE OF PROGRESS THEY'RE MAKING WHETHER OR NOT THEY CAN REENTER AT A SUBSEQUENT TIME POINT.

MS. SAMUELSON: AND IS IT IMPOSSIBLE TO EITHER NAME THE GRANTEE OR GIVE THE DISEASE AREA BECAUSE IT'S JUST TOO SCATTERED A SUMMARY FOR US TO BE ABLE TO TRACK, IT SEEMS TO ME. WE HAVE TO KNOW WHAT YOU'RE TALKING ABOUT.

DR. FEIGAL: YES. WHAT I DID IN THE HANDOUT THAT YOU HAVE, WHICH IS IN THE CONTEXT OF A SLIDE DECK, BUT BASICALLY I GIVE THE PRINCIPAL INVESTIGATOR'S NAME, THE INSTITUTION, AND THE THERAPEUTIC AREA, AS WELL AS THEIR THERAPEUTIC APPROACH. SO THAT IS IN YOUR SLIDE DECK, BUT I'D BE HAPPY TO TALK WITH YOU SEPARATELY TO GO OVER IT.

MS. SAMUELSON: I THINK WE SHOULD HAVE THAT IN FRONT OF US WHEN YOU'RE TALKING.

DR. FEIGAL: IT WAS SENT TO YOU.

MS. SAMUELSON: I BELIEVE YOU.

CHAIRMAN THOMAS: ELLEN, WHY DON'T YOU PROCEED, PLEASE.

DR. FEIGAL: SO THIS DISEASE TEAM I TEAM, THIS IS THE MARBAN TEAM AT CEDARS-SINAI THAT'S WORKING WITH THE THERAPEUTIC APPROACH OF ALLOGENEIC CARDIAC-DERIVED STEM CELLS. AND THEY COMPLETED THEIR IND-ENABLING PRECLINICAL SAFETY AND EFFICACY STUDIES AND SUCCESSFULLY FILED AN IND IN 2012 FOR THEIR PRODUCT THAT CIRM INVESTED IN, AND THEN THEY HAVE A COMPANY CALLED CAPRICOR, WHICH IS A SPINOUT COMPANY THAT OBTAINED NIH FUNDING FOR THE PHASE I COMPONENT OF THE PHASE I-II CLINICAL TRIAL. THEY HAVE INITIATED THE PHASE I COMPONENT ALREADY IN 2013, AND THEY'RE ANTICIPATED TO COMPLETE ENROLLMENT

IN THAT PHASE I COMPONENT BY THE END OF THIS YEAR. WE WILL THEN LOOK AT THE DATA. THEIR DATA SAFETY MONITORING BOARD WILL ALSO LOOK AT THE DATA. WE'LL SEE THAT INFORMATION AND THEN THEY WILL HAVE THE OPPORTUNITY TO PROCEED INTO THE RANDOMIZED PHASE II COMPONENT OF THEIR CLINICAL TRIAL.

THE PHASE I PORTION IS DESIGNED TO TEST TWO DIFFERENT DOSES OF THE CARDIAC-DERIVED STEM CELLS IN TWO DIFFERENT PATIENT COHORTS COMPRISED OF EITHER A RECENT OR A CHRONIC HEART FAILURE PATIENT AFTER THEIR HEART ATTACK. TO DATE THE TRIAL HAS PROGRESSED SMOOTHLY, AND SO WE'RE LOOKING FORWARD TO EVALUATING THE DATA PROBABLY IN ANOTHER MONTH OR TWO.

THE NEXT TEAM IN THE CARDIOVASCULAR SPACE IS DR. JOSEPH WU AT STANFORD. HE HAS A DISEASE TEAM II AWARD THAT'S IN ITS FIRST YEAR OF FUNDING. HE'S LOOKING AT A DIFFERENT THERAPEUTIC APPROACH IN A DIFFERENT THERAPEUTIC INDICATION. HE'S LOOKING AT HUMAN EMBRYONIC STEM CELL-DERIVED CARDIOMYOCYTES FOR THE THERAPEUTIC INDICATION OF END STAGE CONGESTIVE HEART FAILURE. HE'S STILL IN HIS FIRST YEAR OF AWARD; BUT AFTER THE FIRST THREE MONTHS, ALL ACTIVITIES FOR THE MILESTONES FOR THIS PROJECT ARE ON TARGET.

HE IS WORKING WITH DR. SRIVASTAVA FROM GLADSTONE ON STANDARDIZING METHODS FOR THE PRECLINICAL SURGICAL MODELS, ON THE PROCESS DEVELOPMENT TO SELECT THE MANUFACTURING PARAMETERS TO DEMONSTRATE THAT THEY HAVE COMPARABLE PRECLINICAL PROOF OF CONCEPT FOR THE MANUFACTURING OF THIS PRODUCT, WHETHER IT'S DERIVED WITH THE IMPROVED MANUFACTURING METHODS OR WITH THE OLD WAY WITH GROWTH FACTORS. AND THE GOAL OF THIS PROJECT IS TO COMPLETE THE IND-ENABLING STUDY SO THAT THIS TEAM CAN SUCCESSFULLY FILE THE IND FOR THE FIRST-IN-HUMAN CLINICAL TRIAL.

IN THE VASCULAR SPACE, BUT NOT HEART, BUT IN THE PERIPHERAL VASCULAR SPACE, DR. LAIRD AT UC DAVIS HAS A DISEASE TEAM II AWARD. ONCE AGAIN, THIS IS IN THE FIRST YEAR. HE'S DEVELOPING ALLOGENEIC MESENCHYMAL STEM CELLS THAT ARE ENGINEERED TO EXPRESS VEG-F. THAT'S THE FACTOR I TALKED ABOUT THIS MORNING. AND IT'S DELIVERED BY INTRAMUSCULAR INJECTION FOR PATIENTS WITH CRITICAL LIMB ISCHEMIA. HIS PRECLINICAL STUDIES ARE STILL IN PROGRESS, AND THE GOAL IS TO COMPLETE THE IND-ENABLING STUDIES TO SUCCESSFULLY FILE THAT IND AND ALSO TO COMPLETE A PHASE I CLINICAL TRIAL.

SO HE'S VERY AMBITIOUS, HOPES TO COMPLETE

THE IND FILING AND BE ON TRACK TO COMPLETE A FIRST-IN-HUMAN CLINICAL TRIAL IN THE THERAPEUTIC INDICATION OF CRITICAL LIMB ISCHEMIA.

THE NEXT SET OF PROGRAMS ARE FOCUSED ON HIV. SO THEY'RE BOTH TRYING TO ATTACK THE CO-RECEPTOR FOR HIV, WHICH IS CCR5. JUST BECAUSE OF TIME, I'M PROBABLY NOT GOING TO GO INTO A LOT OF THE BACKGROUND FOR WHY CCR5 IS A GOOD TARGET, BUT SUFFICE IT TO SAY THERE'S BEEN OTHER EXPERIMENTS THAT HAVE BEEN DONE IN CLINICAL TRIALS AND IN EXPERIMENTAL-TYPE TREATMENTS BLOCKING THE CCR5 CO-RECEPTOR. THE BERLIN PATIENT, AS YOU MIGHT REMEMBER, RECEIVED A BONE MARROW TRANSPLANT FOR HIS ACUTE LEUKEMIA FROM A DONOR WHO HAD A MUTATED CCR5, AND HE IS STILL HIV FREE MANY YEARS DOWN THE ROAD FROM HIS TRANSPLANT.

AT THE HIV CURE WORKSHOP THEY TALKED ABOUT A HOST OF OTHERS IN SLIGHTLY DIFFERENT TYPES OF THERAPEUTIC APPROACHES WHERE THERE SEEMS TO BE EVIDENCE THAT THERE'S NO EVIDENCE OF VIRAL INFECTION SEVERAL MONTHS TO LONGER THAN THAT. SO IT SEEMS TO BE A VERY INTERESTING APPROACH.

THEY FILED AND HAVE AN APPROVED IND TO CONDUCT A FIRST-IN-HUMAN CLINICAL TRIAL. THE THERAPEUTIC APPROACH IS THEY TAKE THE PATIENT'S OWN,

THE HIV-INFECTED PATIENT'S OWN AUTOLOGOUS HEMATOPOIETIC STEM CELLS AND THEY MODIFY THOSE STEM CELLS AS WELL AS THEIR CD4 POSITIVE T LYMPHOCYTES, WHICH IS THE TARGET FOR HIV, AND THEY MODIFY THEM SO THAT THEY CAN NO LONGER ALLOW ENTRY OF HIV. AND IT'S AT TWO DIFFERENT PLACES. ONE'S AT THE CCR5 ENTRY POINT AND THE OTHER IS WHAT'S CALLED THE C 46 FUSION ENTRY POINT. SO THEY'RE ATTACKING IT AT TWO DIFFERENT SITES. THEY'VE HAD IRB, THE INSTITUTIONAL REVIEW BOARD, AS WELL AS THE RECOMBINANT DNA ADVISORY COMMITTEE APPROVAL OF THEIR CLINICAL TRIAL AND THEY'RE ENROLLING PATIENTS IN CALIFORNIA AT TWO SITES THIS YEAR.

TO DATE THERE'S BEEN NO REPORTS OF SERIOUS SAFETY EVENTS. IN ADDITION, THEY PLAN TO SHARE A TRIAL DESIGN AND DATA FROM A SECOND PLANNED FUTURE EX-U.S. TRIAL WITH THE SAME PRODUCT IN A DIFFERENT SUBGROUP OF HIV PATIENTS, AND THEY'LL SHARE THAT INFORMATION WITH US. AND IF YOU'RE INTERESTED IN MORE DETAILS ABOUT THE CLINICAL TRIAL, IT IS ON CLINICALTRIALS.GOV, AND I PROVIDED THE IDENTIFIER SO YOU CAN LOOK IT UP IF YOU ARE INTERESTED.

THE SECOND PROJECT ATTACKING HIV IS WITH DR. ZAIA AT CITY OF HOPE, AND HE'S WORKING WITH A COMPANY CALLED SANGAMO BIOSCIENCES WORKING WITH

THEIR TECHNOLOGY OF ZINC FINGER NUCLEASE.

THEY'RE USING AN AUTOLOGOUS APPROACH. HERE THEY'RE FOCUSING PRIMARILY ON THE HEMATOPOIETIC STEM CELLS, AND THEY TOO ARE MODIFYING THE CCR5 LOCUS, BUT THEY'RE DOING IT WITH A DIFFERENT TECHNOLOGY, WITH A ZINC FINGER NUCLEUS MRNA. AND HERE THEY'RE TRYING TO DISRUPT THE EXPRESSION OF THAT HIV CO-RECEPTOR. THEY HAVE ACHIEVED PRECLINICAL PROOF OF CONCEPT IN DISEASE MODIFYING ACTIVITY IN PRECLINICAL STUDIES. THEY HAVE COMPLETED THEIR PRE-IND MEETING EARLIER THIS YEAR WITH THE FDA. THEY HAVE HAD A RECOMBINANT DNA ADVISORY COMMITTEE REVIEW WHO UNANIMOUSLY APPROVED THEIR CLINICAL PROTOCOL LAST MONTH IN SEPTEMBER, AND THEY'RE TARGETING AND THEY'RE ON TRACK FOR 2014 FOR THEIR IND FILING WITH A PLAN TO ENTER THE FIRST-IN-HUMAN CLINICAL TRIAL FOR HIV PATIENTS.

THE NEXT SET OF PROGRAMS I'LL TRY AND SUMMARIZE IS IN THE AREA OF CANCER. WE HAVE FOUR PROGRAMS THAT I'LL HIGHLIGHT THE MAJOR POINTS.

THE FIRST INVESTIGATOR IS DR. DENNY SLAMON AT UCLA. HE'S WORKING WITH DR. TAK MAK IN CANADA. THERE'S COLLABORATIVE FUNDING FOR THIS PROGRAM. THEY'RE LOOKING AT A KINASE. IT'S A POLO KINASE 4 PROGRAM. THEY'VE COMPLETED WHAT'S CALLED THEIR CTA.

THAT'S VERY SIMILAR TO WHAT WE CALL AN IND IN CANADA. AND THEY ARE CLEARED IN CANADA TO DO A CLINICAL TRIAL WITH THAT PRODUCT.

AT THE SAME TIME THEY HAVE FILED WITH THE FDA, AND THE FDA HAS REQUESTED A CERTIFICATE OF ANALYSIS BEFORE APPROVING THE IND SUBMISSION. THIS IS BASICALLY RELATED TO THE DRUG PRODUCT MANUFACTURING. THEY EXPECT TO FINISH THEIR DRUG PRODUCT MANUFACTURING IN OCTOBER, THIS MONTH, AND WILL HAVE THE CERTIFICATE OF ANALYSIS WHICH WILL THEN BE SENT TO THE FDA. AND THIS WAS REALLY ONE OF THE MAJOR ITEMS THAT THE FDA WANTED TO SEE, AND IT'S SOMETHING THAT THEY CAN DELIVER ON. THE PROJECT IS MOVING VERY WELL. IT HAS A CLINICAL SUPPLY.

THE SECOND KINASE PROGRAM, HE SELECTED A DEVELOPMENT CANDIDATE. THEY'VE DETERMINED THE MAXIMUM TOLERATED DOSE AND SOME PILOT TOXICOLOGY STUDIES, AND THEY'VE CONTRACTED WHAT'S CALLED GOOD MANUFACTURING PRACTICE MANUFACTURING FOR THE GOOD LABORATORY PRACTICE TOXICOLOGY STUDIES.

THE TEAM ANTICIPATES SELECTION OF A BACKUP FOR THE SECOND KINASE PROGRAM BY THE END OF THIS YEAR. AS I MENTIONED, THEY DO HAVE COLLABORATIVE FUNDING PROGRAM DOLLARS FROM CANADA IN ADDITION TO CIRM FUNDING. THEY'RE PLANNING A FIRST-IN-HUMAN

CLINICAL TRIAL FOR PATIENTS WITH SOLID TUMORS.

THE NEXT PROGRAM IN OUR CANCER PORTFOLIO IS ALSO A DISEASE TEAM I PROJECT. IT'S DR. KAREN ABOODY AT THE CITY OF HOPE. SHE'S ALREADY HAD HER PRE-IND MEETING WITH THE FDA, AND HER IND-ENABLING TOX PROTOCOL HAS ALREADY BEEN VETTED.

HER THERAPEUTIC APPROACH IS ACTUALLY USING NEURAL STEM CELLS AS A HOMING DEVICE TO ATTACK THE TUMOR BEARING BRAIN CELLS AND DELIVER A PAYLOAD OF A CYTOTOXIC CHEMOTHERAPY. SO HERE SHE'S USING IT AS A DELIVERY VEHICLE TO DELIVER A PAYLOAD WHICH WILL BE TOXIC TO THE BRAIN TUMOR. IT'S A TYPE OF TUMOR THAT'S VERY HARD TO TREAT. IT CAN BE VERY INVASIVE IN THE BRAIN. SO SHE'S TYING TO DO VERY SELECTIVE TARGETING WITH THIS CELL THERAPY APPROACH.

SHE'S ALREADY PRESENTED THIS TO THE RECOMBINANT DNA ADVISORY COMMITTEE LAST MONTH. THERE WERE JUST SOME MINOR CHANGES IN THE INFORMED CONSENT THAT SHE WAS ASKED TO MAKE. ONCE AGAIN, IT WAS VERY DOABLE. HER PROOF OF CONCEPT RESULTS HAD SHOWN DECREASED TUMOR VOLUME, PROLONGED SURVIVAL IN A BRAIN TUMOR MODEL WITH A HUMAN GLIOBLASTOMA CELL LINE, AND SHE HAS STUDIES WITH THE PRIMARY BRAIN TUMOR PENDING. HER IND FILING IS ON TRACK FOR FILING FOR A CLINICAL TRIAL FOR PATIENTS WITH BRAIN

CANCER.

IN ADDITION, WHAT HER TEAM HAS DONE IS TRIED TO DEVELOP THE IMAGING TECHNOLOGY TO FIGURE OUT WHERE THESE CELLS GO. ONE OF THE THINGS WE FACE WITH THIS TYPE OF PRODUCT AS OPPOSED TO OTHER TYPES OF BIOLOGICS OR SMALL MOLECULES IS THAT THESE CELLS ARE ALIVE. AND SO THERE'S AN INTEREST IN TRACKING THEM. AND YOU MAY BE ABLE TO DO IT VERY WELL IN THE ANIMAL OR YOU COULD SACRIFICE AN ANIMAL AND LOOK TO SEE WHAT HAPPENED, BUT NOT SO EASY IN HUMANS. SHE'S DEVELOPED A NONINVASIVE IMAGING TECHNOLOGY THAT USES VERY SMALL PARTICLES OF IRON TO TRACK WHERE THE CELLS ARE GOING. THIS WAS APPROVED BY THE FDA TO USE THIS AS AN IMAGING TOOL. SHE'S UTILIZED IT IN THREE PATIENTS IN A DIFFERENT STUDY WITH A DIFFERENT PRODUCT, AND THOSE IMAGES ARE BEING EVALUATED AT THIS TIME.

SHE ALSO FOUNDED A COMPANY CALLED THERABIOLOGICS FOR THE DEVELOPMENT OF NEURAL STEM CELL-BASED TREATMENTS THAT HOME TO THE BRAIN CANCER AND DELIVER AN ENZYME TO ENHANCE THE CHEMOTHERAPY DELIVERY. SHE'S GOT SIX PUBLICATIONS THAT ACKNOWLEDGE CIRM FUNDING. SHE'S ALSO BEEN AWARDED NIH NINDS FUNDS FOR PRECLINICAL STUDIES OF THE SAME PRODUCT, BUT IN ANOTHER INDICATION. SHE'S LEVERAGED

HER WORK THAT SHE'S DONE HERE WITH CIRM WITH ANOTHER FUNDING AGENCY.

DR. WEISSMAN AT STANFORD IS WORKING WITH DR. PERISH VYAS IN THE UK. THEY HAVE IDENTIFIED A NOVEL THERAPEUTIC CANDIDATE. I SHOULD ALSO SAY THEY HAVE MRC FUNDING, MEDICAL RESEARCH COUNCIL, FUNDING FROM THE UK IN ADDITION TO CIRM FUNDING.

THEY'RE LOOKING AT AN INHIBITOR TO CD 47, WHICH IS BASICALLY A DON'T EAT ME SIGNAL, AS CHARACTERIZED BY THE INVESTIGATOR, THAT RESIDES ON THE CANCER STEM CELLS. THEY'VE ACHIEVED PRECLINICAL PROOF OF CONCEPT. THEY'VE BEEN THROUGH THEIR PRE-IND DISCUSSIONS, AND THEY HAVE AN IND-ENABLING PLAN THAT'S BEEN VETTED. THEY HAVE THEIR PILOT SAFETY STUDIES COMPLETED. THEY'VE COMPLETED THEIR MANUFACTURING AND HAVE INITIATED THEIR PIVOTAL SAFETY STUDIES.

THE IND FILING IS ON TRACK FOR 2014. A PATENT HAS BEEN FILED FOR THE THERAPEUTIC CANDIDATE, WHICH WAS CHARACTERIZED UNDER THE DISEASE TEAM I AWARD. THEY'RE PLANNING A FIRST-IN-HUMAN CLINICAL TRIAL FOR PATIENTS WITH LEUKEMIA AS WELL AS WITH OTHER CANCERS.

THE OTHER PROGRAM THAT WE ARE FUNDING IS DR. DENNIS CARSON AT UC SAN DIEGO AND DR. JOHN DICK,

WHO'S RECEIVING FUNDING AS PART OF A COLLABORATIVE FUNDING PARTNERSHIP FROM CANADA. THIS DISEASE TEAM I TEAM IDENTIFIED AN INHIBITOR TO WHAT'S CALLED ROR1 ON THE CANCER STEM CELL. ONCE AGAIN, THREE OF THE FOUR PROGRAMS THAT YOU'VE JUST BEEN HEARING ABOUT ARE ATTACKING THE CANCER STEM CELL. ONE IS USING THE STEM CELL AS A HOMING DELIVERY DEVICE.

SO THIS GROUP HAS ACHIEVED PRECLINICAL PROOF OF CONCEPT. THEY'RE CONTINUING WORK ON THEIR MANUFACTURING. THEY'RE DEVELOPING THE NECESSARY ASSAYS, FORMULATION, AND STABILITY TO BE ABLE TO MOVE IT TOWARDS THE CLINIC. THEY'RE ON TRACK FOR THEIR IND-ENABLING STUDIES TO BE COMPLETED BY THE END OF THEIR GRANT PERIOD. AND THEY'RE PLANNING A FIRST-IN-HUMAN CLINICAL TRIAL FOR PATIENTS WITH LEUKEMIA.

THE NEXT THERAPEUTIC AREA IS THAT OF BLOOD DISEASES, AND WE HAVE SEVERAL PROGRAMS IN THIS SPACE. THE FIRST PROGRAM I'LL DESCRIBE IS DR. DON KOHN AT UCLA. HE HAS A DISEASE TEAM I AWARD. HE'S USING AUTOLOGOUS BONE MARROW HEMATOPOIETIC STEM CELLS THAT HAVE BEEN GENETICALLY MODIFIED. HE'S REENGINEERED THEM SO THAT THEY ENCODE AN ANTI-SICKLING BETA GLOBIN SO THAT PATIENTS WITH SICKLE CELL DISEASE CAN PRODUCE NORMAL RED BLOOD

CELLS. SO THEY'RE TRYING TO CHANGE THE TYPE OF CELLS THESE PATIENTS PRODUCE FROM THE SICKLING ONES THAT GET STUCK IN THE BLOOD VESSELS AND CAN'T FUNCTIONALLY DELIVER THE OXYGEN. THAT'S WHY PEOPLE GO INTO THESE TERRIBLY PAINFUL CRISES AND HAVE LUNG PROBLEMS IN ADDITION TO SEVERE PAIN. SO HE'S TRYING TO CORRECT THAT DEFECT.

HE'S ACHIEVED PRECLINICAL PROOF OF CONCEPT AND DISEASE MODIFYING ACTIVITY. HE'S PUBLISHED THESE FINDINGS IN JULY OF THIS YEAR. HE'S COMPLETED HIS PRE-IND MEETING WITH THE FDA. HE HAS A CLEARED PROTOCOL FROM THE RECOMBINANT DNA ADVISORY COMMITTEE. HE'S ESTABLISHED THE CLINICAL SCALE MANUFACTURING PROCESS. HE'S IN PROGRESS WITH HIS SAFETY STUDIES, AND HE'S HAD THE CLINICAL PROTOCOL ALREADY REVIEWED AND APPROVED BY UCLA INSTITUTIONAL REVIEW BOARD AND BY OTHER REGULATORY BODIES AND SCIENTIFIC INSTITUTIONAL BODIES THAT WANT TO GET THEIR EYES ON THAT PROTOCOL. THEY'VE ALL REVIEWED IT; THEY'VE APPROVED IT. SO HE'S ON SCHEDULE TO FILE AN IND IN 2014 FOR THE FIRST-IN-HUMAN CLINICAL TRIAL IN PATIENTS WITH SICKLE CELL DISEASE.

THE SECOND PROGRAM IS EARLIER AND IT'S MORE RECENTLY AWARDED. IT'S DR. URNOV AT SANGAMO BIOSCIENCES. HE'S IN HIS FIRST YEAR OF AWARD.

ACTUALLY THEY'RE STILL FINALIZING OUR PREFUNDING ADMINISTRATIVE REVIEW. HE'S DEVELOPING AUTOLOGOUS HEMATOPOIETIC STEM CELLS THAT HAVE BEEN GENETICALLY MODIFIED WITH THE TYPE OF TECHNOLOGY I DESCRIBED EARLIER THAT SANGAMO BIOSCIENCES IS EXPERT WITH, AND THAT'S THE ZINC FINGER NUCLEASE.

HERE WHAT HE'S TRYING TO DO IS REACTIVATE THE GAMMAGLOBIN GENE. WHY THIS IS IMPORTANT IS THAT DURING INFANCY THE GAMMAGLOBIN CONTAINING FETAL HEMOGLOBIN PROTECTS PATIENTS WHO HAVE BETA THALASSEMIA FROM DEVELOPING DISEASE SYMPTOMS UNTIL THE GAMMAGLOBIN IS REPLACED BY ADULT TYPE BETA GLOBIN CHAINS.

HE'S COMPLETED HIS EARLY DISCUSSIONS WITH THE FDA IN APRIL OF THIS YEAR IN WHICH THE PRECLINICAL, THE MANUFACTURING, AND THE OUTLINE OF THE CLINICAL DEVELOPMENT PLAN WAS DISCUSSED. AND HE GOT SOME NONBINDING ADVICE FROM THE FDA WITH THAT EARLY INTERACTION.

DR. SHIZURU AT STANFORD IS THE THIRD PROGRAM. SHE IS THE RECIPIENT OF A RECENT DISEASE TEAM II AWARD. SHE'S IN HER FIRST YEAR OF THAT AWARD. WHAT SHE'S DOING IS DEVELOPING A MONOCLONAL ANTIBODY THAT DEPLETES THE BLOOD STEM CELLS AND CAN ENABLE -- HAS THE POTENTIAL TO ENABLE A CHEMOTHERAPY

FREE TRANSPLANT. THEY'RE GOING TO BE ASSESSING THE SAFETY, THE TOLERABILITY. THEY'LL BE LOOKING AT SOME OF THE PHARMACOLOGY OF THAT PRODUCT OF THE HUMANIZED MONOCLONAL ANTIBODY AS PART OF CONDITIONING THAT WON'T REQUIRE CHEMOTHERAPY FOR TRANSPLANTATION IN PATIENTS INITIALLY WITH SEVERE COMBINED IMMUNODEFICIENCY SYNDROME. THEY'VE ALSO EXECUTED A CONTRACT WITH THE COMPANY FOR RIGHTS TO UTILIZE THAT HUMANIZED MONOCLONAL ANTIBODY, AND THEY'VE ALSO HAD AN FDA INTERACTION EARLIER THIS YEAR TO GO OVER THEIR PLANS.

THE NEXT THERAPEUTIC AREA I'M GOING TO TALK ABOUT IS IN THE AREA OF EYE DISEASE. DR. OLSON GAVE YOU A SAMPLING OF SOME OF THE EARLIER WORK THAT BOTH DRS. HUMAYUN AND DR. KLASSEN HAVE DONE. ACTUALLY I THINK IT WAS MAINLY DR. KLASSEN.

MS. SAMUELSON: DR. FEIGAL, BEFORE YOU GO ON TO THAT AREA, IN CANCER IS THERE ANY MECHANISM FOR THESE GRANTEES TO HAVE THE BENEFIT OF DEVELOPMENTS ANYWHERE ELSE IN THE WORLD IN THE SAME AREA AS THEY DEVELOP THEIR OWN PLAN OF ATTACK, IF YOU WILL? AND AT THE SAME TIME, IS THERE ANY MECHANISM FOR THE RESULTS YOU'RE DESCRIBING, WHICH YOU SAY THERE'S INTERACTION WITH THE FDA WITH SOME OTHER SCIENTIFIC INSTITUTIONS? IS THAT ACCESSIBLE

TO SCIENTIFIC INSTITUTIONS OUTSIDE THE STATE?

DR. FEIGAL: WHAT'S ACCESSIBLE PUBLICLY, WHEN THEY HAVE A MEETING WITH WHAT'S CALLED THE RAC, THE RECOMBINANT DNA ADVISORY COMMITTEE, THOSE DOCUMENTS ARE PUBLIC. AND SO YOU CAN FIND -- WE DO HAVE ACCESS TO WHAT THEY PRESENTED AT THIS PUBLIC MEETING. SO THOSE THINGS ARE PUBLIC.

MS. SAMUELSON: I THINK I'M ASKING A BROADER QUESTION BECAUSE THERE'S A BROADER SUPPLY OF DATA THAT IS NECESSARY FOR THE IDEAS TO ADVANCE. I'M NOT THINKING SO MUCH ABOUT THE INDIVIDUAL GRANTEES NOW. THAT'S WHAT WE'RE GOING TO BE GRADED ON, IF YOU WILL. HOW FAR HAS A GIVEN THERAPY ADVANCED TO THE POINT WHERE IT CAN HELP SOMEBODY? IT'S NOT GOING TO MATTER -- IF OUR FUNDING PLAYED SOME ROLE, IT'S NOT GOING TO MATTER IF IT GOES THE WHOLE DISTANCE IN CALIFORNIA OR NOT.

DR. FEIGAL: WELL, I BELIEVE FOUR OF THE PROGRAMS THAT I TALKED ABOUT IN CANCER ARE WORKING WITH EX-U.S. ENTITIES. FOR EXAMPLE -- MAYBE IT WAS ONLY THREE AT THIS POINT. BUT WEISSMAN IS WORKING WITH THE UK.

MS. SAMUELSON: I THOUGHT SOMEONE -- SORRY. GO AHEAD.

DR. FEIGAL: AND SLAMON AND CARSON ARE

WORKING WITH INVESTIGATORS IN CANADA. IN TERMS OF SHARING DATA, ONE OF THE ENTITIES THAT WE AIM TO PUT INTO PLACE, WE HAVE A SOLICITATION THAT'S GOING TO BE POSTED THIS MONTH, IS FOR OUR ALPHA CLINIC PROGRAM. AND WE'RE GOING TO HAVE A COMPONENT OF THAT BE WHAT'S CALLED SHARED KNOWLEDGE WHERE THERE MAY BE SOME THINGS THAT WE CAN SHARE ON A BROADER BASIS. RIGHT NOW THERE IS THE EXPECTATION FOR PROJECTS THAT ARE CERTAINLY FUNDED BY US OR FUNDED BY THE NIH THAT THEY NEED TO PUBLISH, BUT WE KNOW THERE'S A LONG LAG TIME FOR THAT. AND THEN ALSO THAT WHEN THEY PRESENT THINGS AT CONFERENCES, THOSE THINGS ARE IN THE PUBLIC DOMAIN.

SO WE DO REALIZE THAT WE WOULD LIKE TO KNOW MORE INFORMATION, BUT ALSO BECAUSE OF THE SCIENTIFIC CONFIDENTIAL AND PROPRIETARY INFORMATION, SOMETIMES THEY REALLY CAN'T SHARE SOME OF THIS INFORMATION WHILE THEY'RE WORKING THROUGH THE ISSUES. BUT WE DO HEAR WHAT YOU ARE SAYING, AND WE'RE TRYING TO THINK OF WAYS TO SHARE LESSONS LEARNED.

SO THE HUMAYUN PROJECT IN -- THERE'S TWO PROGRAMS IN THE EYE DISEASE, DR. HUMAYUN AT USC, DR. COFFEY, WHO FORMERLY WAS THE UK, BUT HE WAS ACTUALLY SUCCESSFULLY RECRUITED HERE AS A RESEARCH LEADER,

THEY HAVE A DISEASE TEAM I AWARD THAT HAS COMPLETED THE PRE-IND MEETING FOR THE PRODUCT. THEIR THERAPEUTIC APPROACH IS A HUMAN EMBRYONIC STEM CELL-DERIVED WHAT'S CALLED A RETINAL PIGMENT EPITHELIUM. AND THAT'S THE CELL LAYER THAT'S DEFICIENT OR DAMAGED IN PATIENTS WHO HAVE AGE-RELATED MACULAR DEGENERATION. AND THAT'S A THERAPEUTIC INDICATION WHERE IT'S THE MOST COMMON CAUSE OF VISION LOSS IN THE OLDER PATIENT POPULATION.

AND THESE CELLS ARE PUT ON A SCAFFOLD SO THAT THEY CAN APPROPRIATELY ANATOMICALLY ENGRAFT AND DO WHAT THEY NEED TO DO IN THE EYE. SO THEY'RE PUT ON A SCAFFOLD SO THAT THEY'RE ORIENTED IN THE APPROPRIATE WAY. HE'S DOING HIS PIVOTAL SAFETY AND EFFICACY STUDIES NOW. HE'S PLANNING FOR AN IND FILING FOR 2014. HE'S SPUN OUT A COMPANY, REGENERATIVE PATCH TECHNOLOGIES. HE HAS FIVE PUBLICATIONS THAT REFERENCE HIS DISEASE TEAM I AWARD. SO, FRANKLY, A LOT OF THE INFORMATION THAT HE IS WORKING ON HE IS PUBLISHING. FOR EXAMPLE, HE'S DESCRIBED THE APPROACH, THE METHODOLOGY, THE DIFFERENTIATION OF HOW HE GETS THESE CELLS AND THE MATRIX ON WHICH HE'S EMBEDDING THE CELLS.

THE MAJOR NOVEL ADVANCE WITH THIS APPROACH

IS THE DESIGN AND COMPOSITION OF THE MATRIX THAT SUPPORTS THIS CELL MONOLAYER. AND THE MATRIX WAS REALLY DESIGNED TO MIMIC THE PERMEABILITY CHARACTERISTICS OF THE NATURAL MEMBRANE THAT'S DAMAGED AT THE BACK OF THE EYE SO THAT NUTRIENTS AND OXYGEN CAN FLOW IN THE APPROPRIATE WAY SO THAT THESE CELLS CAN GET NOURISHMENT AND CONTINUE TO SURVIVE. ALSO THE MATRIX IS QUITE INTERESTING BECAUSE IT ALSO NEEDS TO BE STRONG ENOUGH TO ENABLE SURGICALLY HANDLING AND TRANSPLANTATION. THIS CELLS ON A MATRIX APPROACH ALLOWS TRANSPLANTATION OF THE CELLS IN THEIR NATURAL STATE, WHICH IS A POLARIZED MONOLAYER WITH THE TOP SURFACE FACING THE PHOTORECEPTORS AS IS REQUIRED FOR CORRECT FUNCTIONING OF THIS RETINAL PIGMENT EPITHELIUM.

THEY'VE DEVELOPED A CUSTOMIZED SURGICAL TOOL TO PERFORM THE TRANSPLANT. THEY HAVE MULTIPLE PATENT FILINGS THAT COVER THE MATRIX AND THE SURGICAL TOOL, AND THEY HAVE COLLABORATIVE FUNDING WITH THE UK.

THE SECOND PROGRAM IS DR. HENRY KLASSEN FROM UC IRVINE WHO PROGRESSED FROM HIS EARLY TRANSLATION AWARD. HE'S IN HIS FIRST YEAR OF HIS DISEASE TEAM II AWARD. HE'S USING A DIFFERENT APPROACH IN A DIFFERENT DISEASE AREA. SO HE'S USING

RETINAL PROGENITOR CELLS TO TREAT PATIENTS WHO HAVE A GENETIC DISORDER THAT CAUSES VISION LOSS AND CAN LEAD TO BLINDNESS. AND THIS OFTEN AFFECTS A YOUNGER PATIENT POPULATION BECAUSE IT'S A GENETIC DISORDER AND CAN STRIKE PEOPLE AT A YOUNGER AGE.

HE'S CONDUCTED THE ACTIVITIES THAT ARE REQUIRED FOR INITIATION OF THE IND-ENABLING TOXICOLOGY AND THE PROOF OF CONCEPT STUDIES. HE'S HAD HIS PRE-IND MEETING WITH THE FDA, AND HE'S ON TRACK TODAY FOR AN IND FILING IN 2014 TO SUBSEQUENTLY ENTER CLINICAL TRIALS. HE'S PUBLISHED IN THE JOURNAL *CLINICAL INVESTIGATION*, STEM CELLS CLINICAL TRIALS TOWARDS CELL-BASED THERAPY FOR RETINAL DEGENERATION DISEASES. AND HE'S ALSO CREATED A SPIN OUT COMPANY, JCYTE.

MOVING TO A DIFFERENT THERAPEUTIC AREA, WHICH IS NEUROLOGIC DISEASE, DR. STEINBERG AT STANFORD HAS A DISEASE TEAM I AWARD WHERE HE'S DONE PRECLINICAL STUDIES TO DEVELOP AN ALLOGENEIC HUMAN EMBRYONIC STEM CELL-DERIVED NEURAL STEM CELL THERAPY FOR PATIENTS WHO HAVE HAD A STROKE. HE HAS ONGOING STUDIES TO DEMONSTRATE THE REPRODUCIBILITY OF THE MANUFACTURING PROCESS, ITS EFFICACY OF THAT PRODUCT IN BOTH AN ACUTE AND A CHRONIC MODEL OF STROKE, AND HE'S LOOKED AT PRELIMINARY TOXICITY IN A MODEL THAT

SUPPORTS THE PERSISTENCE OF THE CELLS.

WE'RE ANTICIPATING THE ABILITY TO REVIEW HIS DATA NEXT MONTH, AND THE GOAL IS TO COMPLETE STUDIES FOR SUCCESSFUL FILING OF AN IND.

THE NEXT INVESTIGATOR IS DR. SVENDSEN WHO'S AT CEDARS-SINAI, AND HE'S ALSO IN THE FIRST YEAR OF A DISEASE TEAM II AWARD. HE'S WORKING ON THE MANUFACTURING PROCESS, THE PRECLINICAL STUDIES, AND THE DEVICE DELIVERY FOR ALLOGENEIC NEURAL PROGENITOR CELLS THAT ARE GENETICALLY MODIFIED TO PRODUCE GDNF. THE GOAL IS TO COMPLETE STUDIES FOR A SUCCESSFUL FILING OF AN IND AND COMPLETION OF A PHASE I CLINICAL TRIAL FOR PATIENTS WITH ALS. THIS IS A DEVASTATING DISEASE. THERE ARE SOME CLINICAL TRIALS OUT THERE, BUT RIGHT NOW THE ONLY APPROVED THERAPY HAS VERY MODEST EFFECT ON THIS DISEASE. SO THIS IS A VERY HIGH UNMET MEDICAL NEED WITH VERY LIMITED THERAPEUTIC OPTIONS.

THE OTHER PROGRAM IN NEUROLOGIC DISEASE IS DR. CAPELA AT STEM CELLS, INC. YOU HEARD A LITTLE BIT ABOUT THE PROGRESSION OF THE EARLY TRANSLATION AWARD AND THE WORK DONE THERE WITH DR. LAFERLA AT UC IRVINE AND HOW THAT CONTRIBUTED TO THE WORK THAT'S BEING DONE IN THIS DISEASE TEAM II AWARD. THEY'RE IN THE FIRST YEAR OF THEIR AWARD. THEY'RE

DEVELOPING A NEURAL STEM CELL TRANSPLANTATION FOR NEUROPROTECTION IN PATIENTS WITH ALZHEIMER'S DISEASE. THEY'RE IN THE FIRST YEAR. AFTER THREE MONTHS ALL THE ACTIVITIES FOR THEIR MILESTONES ARE ON TARGET, AND THEIR GOAL IS TO COMPLETE THEIR PRECLINICAL STUDIES FOR SUCCESSFUL FILING OF AN IND.

THE NEXT THERAPEUTIC AREAS ARE IN BONE AND SKIN. NANCY LANE AT UC DAVIS IS IN HER FIRST YEAR OF A DISEASE TEAM II AWARD. SHE'S DEVELOPING A SYNTHETIC MOLECULE LLP2A THAT HAS A LIGAND TO ALENDRONATE, WHICH IS A BISPHOSPHONATE THAT'S UTILIZED IN PATIENTS WHO HAVE OSTEOPOROSIS. WHAT SHE'S TRYING TO DO IS ENHANCE HOMING OF ENDOGENOUS BONE MARROW MSC'S TO THE BONE SURFACE FOR PATIENTS WHO HAVE OSTEOPOROSIS. SHE'S WORKING ON A DETAILED PLAN TO CONDUCT THOSE IND-ENABLING STUDIES THAT INCLUDE MANUFACTURING PROGRAM AND A PRECLINICAL PROGRAM TO ASSESS STABILITY, TOXICOLOGY, AND EFFICACY OF THE PROPOSED DRUG. THE MANUFACTURING AND THE DEVELOPMENT OF THE ANALYTICAL ASSAYS TO CHARACTERIZE AND QUALIFY THE DRUG PRODUCT ARE IN PROCESS AND SUBSEQUENTLY WILL HAVE RELEASE MATERIAL TO CONDUCT THOSE ESSENTIAL STUDIES IN TOX, PHARMACOLOGY, AND STABILITY.

THEY PLAN TO SUCCESSFULLY SUBMIT AN IND IN

2014 FOLLOWED BY CONDUCTING A PHASE I CLINICAL TRIAL. SO, ONCE AGAIN, A VERY AMBITIOUS PLAN, AND THEY'RE JUST IN THEIR FIRST YEAR OF A FOUR-YEAR AWARD.

DR. ALFRED LANE IS AT STANFORD. HE'S IN HIS THIRD YEAR OF A DISEASE TEAM I AWARD. HE IS WORKING ON A VERY CHALLENGING THERAPEUTIC AREA, A GENETIC DEFECT THAT REALLY CAN CAUSE YOUR SKIN TO SLOUGH OFF AND ALSO AFFECTS THE EPITHELIUM IN OTHER PARTS OF YOUR BODY, LIKE THE WHOLE GI TRACT, THE CORNEA OF THE EYE. IT'S A MULTISYSTEM DISEASE. BASICALLY HE'S DEVELOPING A THERAPEUTIC APPROACH USING INDUCED PLURIPOTENT STEM CELLS. SO THIS IS OUR IPS PROJECT IN THE DEVELOPMENT TEAM.

SO HE'S LOOKING AT EPIDERMAL SHEETS FROM EXPANDED AUTOLOGOUS GENETICALLY CORRECTED TO EXPRESS WILD TYPE COLLAGEN 7 IPS-DERIVED KERATINOCYTES FOR PATIENTS WHO HAVE THIS RARE GENETIC SKIN DISORDER THAT LACKS COLLAGEN TYPE 7. THE NAME OF THE DISORDER IS EPIDERMOLYSIS DYSTROPHIC BULLOSA. HE'S ACHIEVED PRECLINICAL PROOF OF CONCEPT. HE'S GENERATED PATIENT-DERIVED GENE CORRECTED LINES. HE'S REALLY FOSTERING WHAT THE REGULATORY PATH COULD BE FOR PATIENT-SPECIFIC IPS-DERIVED THERAPIES. AND AS OPPOSED TO SOME OF THE COMMON DISEASES THAT WE'RE

LOOKING AT, AS YOU CAN TELL, WE'RE ALSO LOOKING AT RARE ORPHAN DISEASES. AND SO HIS GOAL IS TO COMPLETE IND-ENABLING STUDIES TO SUCCESSFULLY FILE AN IND TO ENTER A CLINICAL STUDY.

I THINK THIS IS LAST, BUT NOT LEAST. WE HAVE A PROGRAM IN DIABETES, WHICH WE'VE NURTURED ALL ALONG THE WAY FROM EARLY THROUGH DISEASE TEAM AND NOW IN A STRATEGIC PARTNERSHIP. AND IT'S WITH TWO DIFFERENT PI'S. ONE WAS DR. ROBINS FOR THE DISEASE TEAM I. THE STRATEGIC PARTNERSHIP IS WITH DR. FOYT. AND COMPANY THIS IS WITH IS VIACYTE.

SO THEY'RE DEVELOPING AN ALLOGENEIC HUMAN EMBRYONIC STEM CELL-DERIVED PANCREATIC CELL PROGENITOR IN A DEVICE THAT CAN BE IMPLANTED SUBCUTANEOUSLY FOR PATIENTS WHO HAVE INSULIN REQUIRING DIABETES. THEIR VISION IS TO HAVE A ONETIME OR INFREQUENT TREATMENT FOR DIABETES AND REPLACE, IF NOT COMPLETELY ELIMINATE, THE NEED FOR INSULIN IN THESE PATIENTS.

BECAUSE OF THE HOST IMMUNE RESPONSE, IN ADDITION TO CONCERNS ABOUT ALLOGRAFT REJECTION, THEY'RE PUTTING THIS IN A DEVICE THAT WORKS AS AN IMMUNO-ISOLATION DEVICE IN PRECLINICAL MODELS. THE GLP STUDIES ARE IN PROGRESS. THEY'VE ALREADY COMPLETED ALL THEIR PRE-IND MEETINGS, AND THEY'RE

DOING THEIR PIVOTAL IND-ENABLING GOOD LABORATORY PRACTICE STUDIES RIGHT NOW. THEIR IND FILING IS ON TRACK FOR 2014. IN ADDITION, THEY'VE COMPLETED THE 10.6 MILLION IN PRIVATE FINANCING FROM INVESTORS. THIS WAS REALLY A REQUIREMENT TO BE PART OF THAT STRATEGIC PARTNERSHIP PROGRAM. AND THE PEOPLE WHO ARE INVESTING INCLUDE J & J DEVELOPMENT CORPORATION, AND THEY ALSO HAVE COLLABORATIVE FUNDING WITH THE JUVENILE DIABETES RESEARCH FOUNDATION.

THE STRATEGIC PARTNERSHIP AWARD HAS BEEN LAUNCHED, AND THEY'RE JUST IN THEIR FIRST YEAR WITH THE GOAL OF THAT AWARD TO COMPLETE AN EARLY PHASE CLINICAL TRIAL.

THIS IS A PARTICULARLY -- THERE ARE SEVERAL OF OUR PROJECTS WHERE THERE ACTUALLY ARE BIOMARKERS WHERE IT HAS THE POTENTIAL TO HAVE AN EARLY READ BECAUSE OF THE DISEASE THEY'RE GOING INTO. DIABETES IS ONE WHERE YOU CAN LOOK AT C PEPTIDE WHICH IS ONLY SEEN WHEN YOU HAVE HUMAN INSULIN BEING PRODUCED. YOU HAVE HIV, OF COURSE, WHERE YOU CAN LOOK AT VIRAL LOAD. YOU HAVE VISION LOSS WHERE THE END POINT OF INTEREST IS VISUAL ACUITY. AND WITH THALASSEMIA OR SICKLE CELL, YOU CAN LOOK AT THEIR NEED FOR BLOOD TRANSFUSIONS. SEVERAL OF THE PROJECTS THAT WE'RE WORKING ON HAVE

BIOMARKERS OR AT LEAST NEAR TERM ENDPOINTS THAT CAN REFLECT WHETHER OR NOT THEY'RE GOING IN THE RIGHT DIRECTION.

THIS IS JUST A STATUS UPDATE OF ALL THE DISEASE TEAM I COHORTS. IT GIVES ALL THE DIFFERENT DISEASES WE'RE LOOKING AT, HOW MUCH THEY WERE AWARDED, AND THEIR CURRENT STATUS.

MAYBE FOR PURPOSES OF TIME, I WON'T SPEND MUCH TIME ON THIS. YOU CAN LOOK AT IT WHENEVER YOU HAVE YOUR LEISURE. AND IF QUESTIONS CROP UP, PLEASE FEEL FREE TO RECONTACT US.

THIS IS THE STATUS OF THE DISEASE TEAM II AND THE STRATEGIC PARTNERSHIPS I AND II. ONCE AGAIN, THE PI, THE DISEASE, HOW MUCH THEY WERE AWARDED, AND THEIR CURRENT STATUS.

THE OTHER THINGS THAT CIRM DOES, IN ADDITION TO PROVIDING RESEARCH FUNDING, IS ACTUALLY WORKING EXTENSIVELY WITH THE INVESTIGATORS TRYING TO HELP THEM AVOID BUMPS IN THE DEVELOPMENT PATHWAY. AND THOSE BUMPS CAN BE QUITE SUBSTANTIAL AT TIMES.

ACTUALLY ALL OF OUR SCIENCE OFFICERS ARE ASSIGNED DIFFERENT TEAMS, AND THEY WORK WITH THE TEAMS TO HELP BUILD THE PRODUCT DEVELOPMENT EXPERIENCE IN CALIFORNIA. THE PROGRAMS, ALL OF THEM ARE DRIVEN BY THE SCIENCE AND THE EVIDENCE AND ALSO

THE REGULATORY CONSIDERATIONS THAT ARE NEEDED ON THE DEVELOPMENT PATHWAY. SO PRIOR TO ALL THESE AWARDS, WE SIT DOWN WITH THE INVESTIGATORS AND SET MUTUALLY AGREED UPON GO/NO-GO MILESTONES, PROGRESS MILESTONES, AND SUCCESS CRITERIA. AND DURING THE CONDUCT OF RESEARCH, WE HAVE DISCUSSIONS AT LEAST QUARTERLY WITH UPDATES ON THEIR INTERVAL AND ANNUAL PROGRESS. WE REVIEW THEIR PRECLINIC -- THE SCIENCE OFFICERS REVIEW THE PRECLINICAL AND CLINICAL PROTOCOLS, THE REGULATORY STRATEGY, AND HELP PREP THEM FOR INTERACTIONS WITH THE FDA, AND THEY ALSO ATTEND THE TEAM MEETINGS.

IN ADDITION, AS I MENTIONED EARLIER DURING THE PRESIDENT'S REPORT, WE ALSO PROVIDE EDUCATION AND TRAINING OF TEAMS THROUGH OUR CIRM-FDA WEBINARS, ROUNDTABLES, CONFERENCES, AND SEMINARS.

WE ALSO PROVIDE A HOST OF DIFFERENT TYPES OF TEMPLATES TO HELP GUIDE THEM AS THEY'RE, ONE, PUTTING TOGETHER THEIR APPLICATIONS FOR THE PROGRAM AND ALSO DURING THE CONDUCT OF THEIR RESEARCH. I WOULD SAY THE VAST MAJORITY OF OUR INVESTIGATORS ARE FROM THE ACADEMIC COMMUNITY AND DEVELOPING A PRODUCT IS NOT SOMETHING THAT WAS IN THE MIDDLE OF THEIR RADAR SCREEN. SO WE TEND TO HAVE A LOT OF INTERACTIONS WITH THEM SO THAT THEY CAN BE MORE

SUCCESSFULLY PREPARED TO GO DOWN THAT PATHWAY BECAUSE WE OBVIOUSLY HAVE A GREAT INTEREST IN MAKING SURE WE'RE DOING WHAT WE CAN TO SUCCESSFULLY POSITION THEM. SO THESE ARE JUST A LIST OF SOME OF THE THINGS THAT WE DO.

AS I MENTIONED, WE HAVE WEBINARS, ROUNDTABLES, AND WORKSHOPS. THE MOST RECENT WORKSHOP WE HAD WAS IN WASHINGTON, D.C. WITH THE HOST OF COSPONSORS THAT I MENTIONED EARLIER DOING A REPORT. AND BASICALLY WHAT WE HOPE TO TAKE OUT OF THAT IS LESSONS LEARNED REGARDING CELL AND MANUFACTURING, PRECLINICAL, CLINICAL, AND TO SHARE EXPERIENCES AND PLACES WHERE WE MIGHT BE ABLE TO GET A CONVERGENCE OF HOW WE WORK WITH THE EXPEDITED APPROVAL PATHWAYS.

WE ALSO WORK WITH OUR EXTERNAL ADVISORS. SO IT'S NOT JUST INTERNAL. WE BRING IN EXTERNAL ADVISORS ON INDIVIDUAL DEVELOPMENT PROJECTS AT KEY MILESTONES. THEY'RE CALLED THE CLINICAL DEVELOPMENT ADVISORY PANEL. WE HAVE A SERIES OF THEM. THEY COMPLEMENT OUR CIRM SCIENCE INTERACTIONS WITH THE DEVELOPMENT TEAMS. THEY HAVE EXPERTISE IN PRODUCT DEVELOPMENT, IN PRECLINICAL AND CLINICAL CELL PROCESS AND MANUFACTURING, REGULATORY, STEM CELL AND DISEASE-SPECIFIC BIOLOGY, AND DISEASE-SPECIFIC

CLINICAL EXPERTISE. AND THEY ALSO HAVE EXPERTISE OR EXPERIENCE IN COMMERCIAL RELEVANCE.

THERE'S AT LEAST A YEARLY MEETING WITH EACH DEVELOPMENT TEAM TO ASSESS KEY MILESTONES. AND THEIR ADVICE HELPS INFORM CIRM DECISIONS. I CAN SAY WHEN WE FIRST GOT STARTED, IT WAS LIKE A DEER IN THE HEADLIGHTS FOR THE TEAM BECAUSE IT WAS A LITTLE BIT ANXIETY PROVOKING TO PUT YOUR BLEMISHES AND MARKS OUT THERE FOR YOUR FUNDER TO SEE. BUT BASICALLY THEY CAME TO UNDERSTAND THAT WE ACTUALLY ARE FROM THE GOVERNMENT AND WE'RE HERE TO HELP YOU, TRYING TO WORK WITH THEM ON APPROACHES. SO IT WAS A PROFESSIONAL TYPE OF INTERACTION TO HELP THEM GO FORWARD. AND THE ADVICE HAS HELPED INFORM OUR DECISIONS ABOUT WHETHER OR NOT TO CONTINUE FORWARD PROGRESS, WHETHER TO REFINE THE APPROACH, WHETHER TO MODIFY MILESTONES, TIMELINES, BUDGET. WE HAVE TERMINATED PROJECTS, AND WE HAVE CONVERTED SOME PROJECTS TO AN EARLIER PHASE WITH A REDUCED SCOPE AND BUDGET.

IN ADDITION, I'LL JUST BRIEFLY TOUCH. WE'VE ALSO USED EXTERNAL ADVISORS TO THINK ABOUT OUR PORTFOLIO AND TO HELP US THINK THROUGH WHAT ARE SOME OF THE ISSUES SO THAT WE CAN FOCUS AND PRIORITIZE TO MEET OUR STRATEGIC GOALS. WE HAVE A TRANSLATIONAL

PORTFOLIO THAT YOU'VE HEARD ABOUT TODAY THAT IS VERY BROAD, IT CAN BE DEEP, BUT WE KNOW WE'RE NOT GOING TO BRING 70 PROJECTS ALL THE WAY THROUGH. WE HAVE A FINITE PURSE, WALLET. AND AS WAS MENTIONED EARLIER, WE'RE IN THAT PHASE CALLED FOCUS. AND WE'RE IN THAT PHASE WHERE WE HAVE A STRATEGIC GOAL. AT LEAST ONE OF THEM IS TO SHOW CLINICAL PROOF OF CONCEPT. SO THERE'S A REAL NEED TO PRIORITIZE AND FOCUS WHAT WE DO.

RIGHT NOW WE TEND TO DO THINGS PROJECT BY PROJECT BY PROJECT. AND BECAUSE, ONE, WE'RE NOT A COMPANY, SO WE DON'T HAVE TOTAL CONTROL OVER WHICH THINGS COME IN AND HOW THINGS CAN ADVANCE, BUT WE'RE TRYING TO THINK HOW CAN WE GET OUR ARMS SO THAT WE ACTUALLY DO HAVE A CHANCE OF REACHING THAT CLINICAL PROOF OF CONCEPT GOAL AND ALSO NOT COMPLETELY EXHAUSTING THE BUDGET BEFORE WE CAN GET TO THAT POINT. SO WE ARE ADVANCING PROJECTS TO THE PIPELINE. WHAT ARE THE KEY CRITERIA IN TERMS OF CHARACTERISTICS OR ATTRIBUTES TO CONSIDER FOR IDENTIFYING WHICH PROJECTS TO SELECT FOR MORE FOCUSED ATTENTION AND FUNDING? CONSIDERATIONS FOR WHICH TYPE OF PLATFORMS.

RIGHT NOW WE'RE PRETTY ECUMENICAL. WE GO ACROSS A VARIETY OF DIFFERENT TYPES OF CELL THERAPY.

IS IT THE RIGHT BALANCE OF AUTOLOGOUS RELATIVE TO ALLOGENEIC? IS IT THE RIGHT BALANCE OF PLURIPOTENT RELATIVE TO ADULT STEM CELLS? SHOULD IT BE MORE FOCUSED ON CELL THERAPY RELATIVE TO MORE STANDARD APPROACHES LIKE BIOLOGICS AND SMALL MOLECULES, WHICH ALREADY HAVE A WELL-DEVELOPED INDUSTRY TO DEVELOP THEM?

WHAT ABOUT THE FOCUS ON THE TYPE OF DISEASES, RARE OR COMMON? WHAT ABOUT THE ISSUE OF BALANCING THAT HIGH RISK, POTENTIALLY HIGH IMPACT VERSUS WE WANT TO GET TO OUR GOAL? IS THERE A NEAR TERM WAY TO REACH IT? AND WHAT ABOUT HOW MUCH DO WE NURTURE WITHIN OUR ENDOGENOUS PIPELINE VERSUS CONTINUING TO BE POROUS AND ALLOW EXTERNAL THINGS TO COME IN? THE ISSUE OF HOW MUCH OF A PROPORTION TO HAVE EARLY PRECLINICAL VERSUS THE DEVELOPMENT TEAMS. AND IN THE EARLY PRECLINICAL, AS YOU HEARD, WE HAVE PROBABLY ABOUT 50 PROJECTS AT THIS POINT IN TIME. WHICH ATTRIBUTES SHOULD WE CONSIDER FOR FURTHER INVESTING?

SO WE DID CONVENE EXTERNAL ADVISORS IN JULY TO TALK ABOUT THE STRATEGY FOR TRANSLATIONAL PORTFOLIO. IT WASN'T ABOUT INDIVIDUAL PROJECTS. IT WAS MORE ABOUT ATTRIBUTES. WHAT ARE THE ATTRIBUTES OF WHAT YOU'D WANT TO HAVE IN A TRANSLATIONAL

PORTFOLIO? AND WE CONVENED A GROUP THAT HAD EITHER BEEN ON OUR GRANT REVIEW GROUP OR BEEN PARTICIPANTS IN CDAP BECAUSE WE DIDN'T WANT TO START AT GROUND ZERO. WE WANTED TO START WITH INVESTIGATORS WHO ALREADY KNEW ABOUT CIRM, OUR MISSION, AND WERE FAMILIAR WITH THE PROJECTS. AND SO WE HAD A ONE-DAY DISCUSSION TALKING ABOUT THE ATTRIBUTES OF WHAT WOULD CONSTITUTE A COMPETITIVE TRANSLATIONAL PORTFOLIO FOR DEVELOPING EFFECTIVE THERAPIES AND ADVICE ON STRATEGIES TO GET THERE.

WE HAD A DISCUSSION ON CRITICAL ATTRIBUTES SEPARATED BY THE TARGET DISEASES AND THERAPEUTIC AREAS AND ABOUT THE PRODUCT CHARACTERISTICS. AND WE ALSO HAD A DISCUSSION ABOUT WHAT DOES IT EVEN MEAN TO GET CLINICAL PROOF OF CONCEPT. AND WHAT ARE SOME OF THE EARLY ENDPOINTS ONE WOULD LOOK AT IN CLINICAL TRIALS? AND WHAT WOULD BE THE ISSUES IN COMMERCIALIZATION?

WE'RE CURRENTLY IN THE PROCESS OF DELIBERATING ON WHAT WE HEARD FROM THAT MEETING, BUT SOME OF THE THEMES THAT CAME OUT IS AS MUCH AS POSSIBLE TRY TO FOCUS ON AREAS WHERE THERE IS KNOWLEDGE ABOUT THE MECHANISM OF ACTION FOR THAT DISEASE AND SOME WAY TO LINK WITH THE THERAPEUTIC APPROACHES WITH THAT MECHANISM OF ACTION. ALSO, IT

WOULD BE EXTREMELY HELPFUL TO FOCUS ON THOSE THERAPEUTIC AREAS WHERE THERE ACTUALLY IS A BIOMARKER OR THE ABILITY FOR AN EARLY READ RATHER THAN HAVING TO WAIT ALL THE WAY THROUGH THE END OF A VERY LONG, EXPENSIVE CLINICAL TRIAL PROCESS.

WE ALSO TALKED ABOUT PRODUCT CHARACTERISTICS. AND THERE REALLY WASN'T A CONSENSUS OTHER THAN TO SAY YOU PROBABLY NEED TO HAVE A BALANCE OF POTENTIALLY HIGH RISK, HIGH IMPACT, AND NEAR-TERM OPPORTUNITIES, BUT WE CAN PROBABLY TALK ABOUT THAT LATER TODAY. AND SO WHAT I'VE TRIED TO DO IS REALLY GIVE YOU A RUN-THROUGH OF THE DIFFERENT DEVELOPMENT TEAMS, WHAT WE'RE FUNDING, WHERE THEY ARE IN THE TIMELINE, AND HOW WE WORK WITH THEM TO MANAGE THEM TO TRY AND DO WHAT WE CAN TO SUCCESSFULLY POSITION THEM. SO THANK YOU VERY MUCH.

CHAIRMAN THOMAS: THANK YOU. COMMENTS BY MEMBERS OF THE BOARD? AL.

MR. ROWLETT: I JUST WANT TO ACKNOWLEDGE THAT THIS PARTICULAR PORTION OF YOUR PRESENTATION IS VERY HELPFUL FOR THE NEW BOARD MEMBER ESPECIALLY BECAUSE, AND I'LL JUST SAY ANECDOTALLY, IT REMINDS ME OF AN INVESTMENT PORTFOLIO, AND WHAT YOU'RE TRYING TO PRESENT TO ME AND THE NOMENCLATURE THAT I HAVE TO THEN UTILIZE TO TALK TO CITIZENS IS EMBEDDED

HERE. AND SO IF I CAN GET MORE INFORMATION ABOUT THIS CONVERSATION, THAT WOULD BE HELPFUL. AND THEN YOU ALIGN THIS WITH OUR STRATEGIC PLAN GOING FORWARD I THINK IS IMPORTANT TO THE CITIZENS OF OUR STATE.

DR. FEIGAL: THANK YOU.

CHAIRMAN THOMAS: THANK YOU, MR. ROWLETT.

DR. DULIEGE: ACTUALLY, ELLEN, YOU MAY HAVE SAID IT. I MAY HAVE MISSED IT. BUT AT AN UPCOMING ICOC MEETING, WILL YOU BE ABLE TO SUMMARIZE THESE RECOMMENDATIONS? IS THAT THE PLAN? YOU'RE CURRENTLY DELIBERATING ON THESE RECOMMENDATIONS.

DR. FEIGAL: I'D BE HAPPY TO SHARE THOSE IN SOME SORT OF DOCUMENT OR AT THE UPCOMING ICOC.

DR. DULIEGE: THAT'S DEFINITELY OF GREAT INTEREST TO EVERYBODY, WHICH IS --

DR. FEIGAL: MAYBE IT WILL COME UP IN A DISCUSSION WE HAVE A LITTLE BIT LATER TODAY.

DR. DULIEGE: THAT'S THE WHOLE POINT.

MR. ROWLETT: I AGREE.

MS. LANSING: I REALLY WANT TO THANK YOU FOR THIS REPORT BECAUSE FOR THOSE OF US WHO ARE PATIENT ADVOCATES, WHEN WE HEAR ABOUT THE CLINICAL TRIALS, I THINK I SPEAK FOR ALL OF US, NOT JUST PATIENT ADVOCATES, BUT THE SCIENTISTS AND EVERYONE IN THE ROOM, THIS IS WHAT WAS THE DREAM OF CIRM.

AND I'M SO ENCOURAGED BY THE VARIOUS AREAS THAT YOU'RE IN, THE DEPTH OF IT, THE BREADTH OF IT.

AND ALSO I JUST WANTED TO REEMPHASIZE THAT PART OF OUR MISSION WAS SHARING THE INFORMATION. AND THE WAY I UNDERSTAND IT, THAT'S GOING ON VERY, VERY MUCH SO. IT'S ALL PUBLICLY PUBLISHED AND IT'S ALL THERE FOR ANYONE TO REACH OUT AND FIND. I THINK JOAN LEFT THE ROOM, BUT I JUST WANTED TO MAKE SURE EVERYONE UNDERSTOOD THAT, THAT WE DON'T HOLD ANYTHING TO OURSELVES. EVERYTHING IS OPEN TO EVERYBODY.

SO OUR CLINICAL TRIALS AND OUR ADVANCES ARE HELPING MANY, MANY CLINICAL TRIALS THAT WE HAVE NOTHING TO DO WITH BECAUSE THEY'RE TEACHING OTHER SCIENTISTS SOMETHING THAT'S HAPPENING AHEAD OF TIME.

DR. FEIGAL: I DO WANT TO JUST PUT A QUALIFICATION ON THAT STATEMENT. WE DON'T ACTUALLY MAKE EVERYTHING PUBLIC. IF IT'S CONFIDENTIAL AND PROPRIETARY, WE OBVIOUSLY DON'T.

MS. LANSING: BUT IT IS -- AGAIN, I UNDERSTAND, BUT IT IS OUR MISSION NOT TO KEEP SOMETHING SECRET, BUT TO EXPOSE IT TO AS WIDE AN AUDIENCE AS POSSIBLE, NOT JUST TO BENEFIT OUR INDIVIDUAL CLINICAL TRIAL, BUT TO BENEFIT MANY CLINICAL TRIALS THAT ARE GOING ON AND BASIC SCIENCE

AS WELL.

CHAIRMAN THOMAS: OTHER COMMENTS BY MEMBERS OF THE BOARD? WE HAVE A COMMENT BY A MEMBER OF THE PUBLIC.

MR. HENRY: MY NAME IS EVAN HENRY, AND I'M A PATIENT ADVOCATE PRIMARILY WORKING WITH PARKINSON'S. I JUST GOT BACK FROM MONTREAL WHERE THEY HAD THE PARKINSON'S STUDY GROUP MEETING, ANNUAL MEETING, AS WELL AS THE WORLD PARKINSON'S CONGRESS. ONE OF THE BIGGEST TOPICS OF CONVERSATION WAS PATIENT RECRUITMENT. ARE WE GOING TO HAVE THE NUMBER OF PATIENTS WE NEED FOR ALL THE TESTS AND RESEARCH TRIALS WE'RE GOING TO HAVE IN THE FUTURE AND ALL SORTS OF MEDICAL RESEARCH?

SO I'M ASKED TO MAKE MY COMMENT DIRECTLY TO CIRM IN THE FORM OF THREE QUESTIONS. FIRST ONE, HAVE THERE BEEN ANY INDICATIONS OF ADDED COST, DELAYS, OR OTHER SIGNIFICANT UNDESIRABLE IMPACTS ON CIRM-FUNDED RESEARCH DUE TO INABILITY TO IDENTIFY AND RECRUIT THE NUMBER OF HUMAN SUBJECTS, AKA PATIENTS, THAT ARE DESIRED OR NEEDED?

NO. 2 --

CHAIRMAN THOMAS: CAN I JUST ASK, SINCE WE WANT TO MAKE SURE WE REMEMBER ALL YOUR QUESTIONS, PERHAPS, DR. FEIGAL, YOU COULD ANSWER EACH IN TURN.

DR. FEIGAL: OUR EXPERIENCE IN CLINICAL TRIALS RIGHT NOW IS LIMITED, BUT ACTUALLY ONE OF THE RECOMMENDATIONS FROM THE TRANSLATIONAL GROUP THAT WE MET WITH IN JULY SAID ENROLLMENT, HUGE ISSUE. AND PEOPLE ALWAYS OVERESTIMATE WHAT THEY CAN DO IN TERMS OF GETTING PATIENTS ONTO CLINICAL TRIALS REGARDLESS OF THE STEM CELL PLATFORM, PARTICULARLY FOR EARLY PHASE CLINICAL TRIALS, UNLESS THERE'S REALLY NOTHING ELSE OUT THERE AND THERE'S REALLY NOT OPTIONS.

IN OUR OWN EXPERIENCE, IT'S VERY EARLY. SO WE DON'T HAVE ANY EXPERIENCE TO SHARE ABOUT ENROLLMENT PROBLEMS, BUT I WOULD ANTICIPATE, SINCE THAT'S THE NORM, IS TO HAVE CHALLENGES ARISE WITH ENROLLMENT. WE ARE VERY CLOSELY LOOKING AT THAT WHEN WE WORK WITH THE TEAMS TO MAKE SURE ARE THEY THINKING ABOUT IT? WHAT'S THEIR BACKUP PLAN? HOW TO MAKE SURE THE INTEGRITY OF THEIR CLINICAL TRIAL STAYS INTACT? ARE THEY LOOKING AT THE RIGHT PATIENT POPULATION? IS THE PROTOCOL TOO RIGID AND PEOPLE DON'T WANT TO GO ON IT BECAUSE OF THE WAY IT'S WRITTEN OR BECAUSE OF THE FREQUENCY OF TESTS? SO THERE ARE A NUMEROUS NUMBER OF THINGS IN ADDITION TO SCIENTIFIC ISSUES, THE OPERATIONAL ISSUES THAT WE NEED TO FOCUS ON.

MR. HENRY: THE SECOND ONE FOLLOWS UP ON

THAT ANSWER. IRRESPECTIVE OF THE ANSWER, SHOULD CIRM BE CONCERNED ABOUT AVAILABILITY AS MORE AND MORE TRANSLATIONAL RESEARCH INVOLVES CLINICAL TRIALS WITH HUMAN SUBJECTS? THAT'S A VOLUME QUESTION.

AND THEN THE LAST ONE IS, IF SO, COULD ADDITIONAL CIRM FUNDS BE MADE AVAILABLE TO ENHANCE DEFICITS IN PATIENT RECRUITMENT THAT THREATEN TIMELY COMPLETION AND OVERALL SUCCESS OF THE RESEARCH THAT CIRM FUNDS? AND COULD THAT BE DONE IN GENERAL AS A GENERAL RECRUITMENT PROGRAM FOR ANY KIND OF PATIENT OR FOR THE SPECIFIC PROJECTS THAT NEED TO COME BACK TO CIRM FOR ADDITIONAL FUNDS?

DR. FEIGAL: I CAN ACTUALLY ANSWER THOSE TWO QUESTIONS IN TANDEM. WE ACTUALLY HAVE BEEN ACTIVELY THINKING ABOUT THE NEXT STEP. WE'VE BEEN WORKING WITH INDIVIDUAL PROJECTS, BUT WE'RE PLANNING FOR SUCCESS AND THAT THERE WILL BE MORE CLINICAL TRIALS. AND SO WE ACTUALLY DO HAVE AN INITIATIVE CALLED THE ALPHA STEM CELL CLINIC THAT WE'RE GOING TO BE POSTING LATER THIS MONTH WHERE THERE WILL BE A COORDINATING INFORMATION MANAGEMENT CENTER AND FIVE WHAT'S CALLED ALPHA CLINIC SITES. AND ONE OF THE BIG ISSUES TO FOCUS ON IS PATIENT ENROLLMENT. SO WE'RE HOPING BY HAVING A COORDINATED EFFORT AND THE ABILITY TO PROVIDE SOME EFFICIENCIES AND EFFECTIVE

WAYS TO ADDRESS PATIENT ENROLLMENT ISSUES ACROSS A BROAD SWATH OF THERAPEUTIC APPROACHES, AND IT IS NOT LIMITED TO CIRM-FUNDED RESEARCH PROJECTS, SO WE EXPECT EITHER CALIFORNIA PROJECTS OR OTHER EXTERNAL PROJECTS THAT WANT TO COME INTO CALIFORNIA BECAUSE PART OF WHAT WE'RE TRYING TO DO IS TO HAVE PATIENTS IN CALIFORNIA HAVE ACCESS TO PROMISING THERAPIES WHETHER IT ORIGINATED HERE OR WE'RE TRYING TO ENTICE SOME OF THEM TO PATIENTS HERE IN CALIFORNIA SO THAT THEY ACTUALLY HAVE THE POSSIBILITY TO ENROLL ON THEM.

IN ADDITION, WE SEE IT AS A POTENTIAL HUB FOR A MORE NATIONAL OR INTERNATIONAL NETWORK.

MR. HENRY: THANK YOU.

MR. REED: AS SOME OF YOU KNOW, THE GOVERNOR RECENTLY VETOED THE ROMAN REED SPINAL CORD INJURY RESEARCH ACT FOR THE SECOND TIME. THE FIRST TIME HE VETOED IT BECAUSE OUR FUNDING MECHANISM WAS A TRAFFIC TICKET ADD-ON OF $1. HE DID NOT APPROVE OF THAT. HE SAID IT HAS TO COME FROM THE GENERAL FUND. THE SECOND TIME IT WAS FROM THE GENERAL FUND. IT PASSED THE SENATE WITH A HUNDRED PERCENT SUPPORT, 39 TO ZERO. IT PASSED THE ASSEMBLY 68 TO 3, AND THE GOVERNOR STILL TURNED IT DOWN. HE SAID HE REGARDED IT AS TRYING TO INTERFERE WITH THE CALIFORNIA UC

SYSTEM, AND THAT HAS NEVER BEEN THE CASE BEFORE. IT'S ALWAYS BEEN EXTRA MONEY COMING INTO THEM.

SO IF ANYBODY -- WE'RE STILL FIGHTING. WE'RE TRYING TO FIND A WAY TO AT LEAST WORK WITHIN THE UC SYSTEM AND HAVE EVERYBODY GIVE US A FEW BUCKS HERE AND THERE TO KEEP THE PROGRAM ALIVE, VERY VALUABLE PROGRAM WHICH MAY BE KILLED FOR A POLITICAL DEFINITION.

I'D ALSO LIKE TO ASK CIRM TO KEEP IN THE BACK OF THEIR MIND THAT SPINAL CORD INJURY IS A TREMENDOUS DEVASTATING CONDITION WHICH AFFECTS 5.6 MILLION AMERICANS. SO KEEP IT IN THE BACK OF YOUR MIND WHEN YOU MAKE DECISIONS ON WHAT SHOULD BE FUNDED. THANK YOU.

CHAIRMAN THOMAS: THANK YOU, DON. ELLEN AND PAT, THANK YOU FOR A VERY ENLIGHTENING UPDATE. I THINK THIS IS WHAT WE'RE ALL ABOUT. I THINK THAT IT'S EXTREMELY VALUABLE FOR THE BOARD TO HEAR ALL OF THIS BECAUSE IT SPEAKS ABOUT THE GREAT PROGRESS THAT OUR PORTFOLIO IS MAKING AND THE WIDE RANGE OF DISEASES AND CONDITIONS THAT WE ARE ATTEMPTING TO FIND CURES FOR.

MR. JENSEN, WELCOME. AS I DID A COUPLE OF YEARS AGO ON ONE OF THESE GREAT UPDATES, WOULD INVITE YOU TO GIVE A GLOWING REPORT OF THE PROGRESS

THAT WE ARE MAKING ON THE SCIENTIFIC FRONTIER, BECAUSE THIS IS, AFTER ALL, THE MEAT AND POTATOES OF WHAT CIRM WAS SET UP TO DO. SO WE WOULD BE DELIGHTED IF YOU TOOK FROM THIS THAT THINGS ARE GOING VERY WELL ON A WIDE RANGE OF FRONTS AND SO REPORTED TO YOUR MANY READERS. SO THANK YOU.

ANYWAY, ELLEN AND PAT, THANKS VERY MUCH. WHAT WE'RE GOING TO DO NOW IS EVERYBODY IS GOING TO, IF YOU WOULD PLEASE, GO GET YOUR LUNCH AND BRING IT BACK INTO THE ROOM. WE'RE GOING TO SEGUE INTO THE NEXT AGENDA ITEM, WHICH ACTUALLY FOLLOWS NICELY ON THE PRESENTATIONS JUST MADE BY DRS. FEIGAL AND OLSON. SO IF YOU COULD NOW TAKE A FEW-MINUTE BREAK, GO GET YOUR LUNCH, AND PLEASE BRING IT BACK HERE, AND WE'LL RECONVENE IN TEN MINUTES OR SO. THANK YOU.

(A RECESS WAS TAKEN.)

CHAIRMAN THOMAS: COULD EVERYBODY PLEASE TAKE YOUR SEATS. SO WE'RE GOING TO MOVE ON NOW TO THE NEXT ITEM ON THE AGENDA, WHICH FOLLOWS NATURALLY FROM THE PRESENTATION WE JUST HAD.

THE IOM REPORT IN PART SUGGESTED THAT DR. TROUNSON CONVENE A SCIENTIFIC ADVISORY BOARD COMPRISED OF WORLD EXPERTS IN THE SPACE TO MEET WITH HIM AND OTHERS AT CIRM TO DEAL WITH THE QUESTION:

WHAT SHOULD WE DO WITH THE $600 MILLION THAT WE HAVE REMAINING ON THE ASSUMPTION THAT WE'RE NOT GOING TO GET ADDITIONAL FUNDING, WHICH FOR PURPOSES OF THIS DISCUSSION WE'LL JUST SAY IS THE CASE. WE ALL KNOW WE'RE LOOKING AT A VARIETY OF THINGS; BUT WITH RESPECT TO THIS, WE HAVE 600 MILLION LEFT.

SO ALAN CONVENED THIS GROUP. THEY MET AND HAVE COME UP WITH RECOMMENDATIONS TO ALAN AND TO THE BOARD. AND WE'RE GOING TO HEAR FROM DR. FEIGAL ON WHAT THOSE RECOMMENDATIONS ARE. SHE'LL DESCRIBE IN MORE DETAIL THE PROCESS. AND DR. FEIGAL WILL TELL US A BIT MORE ABOUT THE PROCESS AND ABOUT THEIR RECOMMENDATIONS, AND WHAT WE HOPE THIS WILL DO IS TO SPUR THE BEGINNING OF A DISCUSSION ON STRATEGIC DIRECTION THAT WE WILL BE TAKING UP IN GREATER DETAIL IN OUR DECEMBER RETREAT.

ONE OF THE IDEAS TODAY IS TO FORMULATE QUESTIONS FOR STAFF AS TO WHAT WE WOULD LIKE TO HEAR OR SEE IN ADVANCE OF THE DECEMBER MEETING AND TO USE THIS DISCUSSION AS A SPRINGBOARD TO THAT. SO WITH ALL OF THAT IN MIND, LET ME NOW TURN IT OVER TO DR. FEIGAL FOR HER PRESENTATION ON THIS MATTER.

DR. FEIGAL: THANK YOU VERY MUCH. SO LET ME JUST FIRST ADD THIS IS HOT OFF THE PRESS. WE JUST RECEIVED THE FINAL REPORT ON MONDAY. AND PART

OF THE REASON WHY I TITLED IT "PRELIMINARY MANAGEMENT RESPONSE" IS WE MAY WANT TO HAVE MORE TIME TO DIGEST AND GO OVER THE ISSUES. BUT I THINK THE SCOPE OF WHAT WE'VE COME UP WITH IS ALSO SOMETHING THAT WILL PROBABLY CONTINUE. BUT AT ANY RATE, I JUST WANTED TO LET YOU KNOW THE TIMING HAS BEEN RELATIVELY RECENT, BUT WE THOUGHT IT WAS VERY IMPORTANT TO SHARE IT WITH THE BOARD SO THAT WE COULD BE ON TRACK FOR THE DECEMBER WORKSHOP.

SO THE PURPOSE OF THE SCIENTIFIC ADVISORY BOARD REVIEW WAS THAT IT WAS REALLY ESTABLISHED IN RESPONSE TO A 2012 RECOMMENDATION OF THE INSTITUTE OF MEDICINE PANEL THAT WAS CHARGED BY CIRM WITH REVIEWING THE INSTITUTE'S OPERATIONS. AND THIS 13-MEMBER IOM PANEL, WHICH WERE MADE UP OF EXPERTS IN STEM CELL RESEARCH, BUSINESS AND FINANCE, LAW, AND BIOETHICS, AND RESEARCH ADMINISTRATION, PRODUCED A SET OF RECOMMENDATIONS AIMED AT ENSURING THAT ALL ASPECTS OF CIRM'S OPERATIONS ARE FUNCTIONING AT PEAK PERFORMANCE.

ONE OF THE RECOMMENDATIONS FROM THE IOM PANEL WAS FOR CIRM TO ESTABLISH AN EXTERNAL SCIENTIFIC ADVISORY BOARD MADE UP OF EXPERTS IN THE SCIENTIFIC, CLINICAL, ETHICAL, INDUSTRY, AND REGULATORY ASPECTS OF STEM CELL BIOLOGY, TO BE

APPOINTED BY AND REPORT TO THE PRESIDENT.

THE INSTITUTE OF MEDICINE PANEL BELIEVED THAT A SINGLE SCIENTIFIC ADVISORY BOARD, AS OPPOSED TO MULTIPLE ADVISORY BOARDS, WOULD BE BEST POSITIONED TO PROVIDE INTEGRATED ADVICE TO THE PRESIDENT ON STRATEGIC PRIORITIES FOR FUTURE SOLICITATIONS FOR FUNDING INNOVATIVE PROJECTS AND THE RESEARCH PORTFOLIO.

MARIA SENT ALL OF YOU A WORD DOCUMENT THAT SUMMARIZES THE BACKGROUND FOR EACH OF THESE DIFFERENT SCIENTIFIC ADVISORY BOARD MEMBERS. SO I DON'T THINK I'M GOING TO GO OVER ANYTHING OTHER THAN THEIR AFFILIATION RIGHT HERE, BUT YOU HAVE THE FULL DETAILS ABOUT THEIR AREAS OF EXPERTISE AND EXPERIENCE. IT WAS A VERY DISTINGUISHED GROUP. ALL BUT ONE WERE EX-CALIFORNIA. THEY DID REPRESENT DIFFERENT FACETS OF EXPERIENCE FROM BASIC BIOLOGY TO INDUSTRY TO CLINICAL TRIALS. SO THERE WAS A BROAD REPRESENTATION ACROSS THESE DIFFERENT AREAS, SO I THINK, IN THE SPIRIT OF THE IOM PANEL, THE COMPOSITION REALLY DID MEET THAT, AND THEY WERE PRIMARILY OUTSIDE OF CALIFORNIA.

SIR JOHN BELL FROM OXFORD CHAIRED THIS FIRST MEETING. AND I JUST WANT TO GIVE A CAVEAT. THIS IS GOING TO BE A BOARD THAT MEETS WITH US ON A

REGULAR BASIS. SO IF ALL THE QUESTIONS WEREN'T ANSWERED OR THERE ARE ADDITIONAL QUESTIONS WE WANT TO POSE, THERE'S GOING TO BE OTHER OPPORTUNITIES TO INTERACT WITH THIS BOARD. SO TAKE IT AS THIS WAS A SNAPSHOT IN TIME WITH THE BACKGROUND AND THE INFORMATION THEY WERE GIVEN REGARDING THE ADVICE THEY PROVIDED.

SO SIR JOHN BELL IS FROM OXFORD UNIVERSITY IN THE UK; COREY GOODMAN HEADS UP VENBIO CORPORATION HERE IN CALIFORNIA; DR. MARIA GRAZIA RONCAROLO FROM THE HOSPITAL SAN RAFFAELE IN ITALY. SHE WAS THE ONLY ONE OF THE SCIENTIFIC ADVISORY MEMBERS WHO WAS UNABLE TO ATTEND OR PARTICIPATE. THE OTHERS INCLUDED DR. SEAN MORRISON FROM THE CHILDREN'S RESEARCH INSTITUTE AT UT SOUTHWESTERN; DR. CHRISTINE MUMMERY FROM LEIDEN UNIVERSITY MEDICAL CENTER IN THE NETHERLANDS; DR. STUART ORKIN FROM THE HARVARD MEDICAL SCHOOL, DANA FARBER CANCER INSTITUTE; DR. FIONA WATT FROM THE CENTRE FOR STEM CELLS AND REGENERATIVE MEDICINE AT KINGS COLLEGE IN THE UK; AND DR. JOHN WAGNER FROM THE UNIVERSITY OF MINNESOTA STEM CELL INSTITUTE.

AND AS I MENTIONED, THIS WAS THE FIRST MEETING, THE FIRST CONVENING OF THE SCIENTIFIC ADVISORY BOARD. AND THE PLAN WOULD BE THAT THERE

MAY BE THREE TO FOUR MEETINGS PER YEAR WITH AT LEAST ONE OF THOSE SESSIONS TO BE DONE IN PERSON.

THE MEETING AGENDA AND PROCESS, IT WAS THE CIRM PRESIDENT SELECTED THE DIFFERENT MEMBERS OF THE SAB WITH SOME INPUTS FROM SCIENTIFIC STAFF, FROM OTHER MEMBERS, OR OTHER EXTERNAL INPUTS HE MAY HAVE HAD, AND CONVENED THE SCIENTIFIC ADVISORY BOARD ON AUGUST 23D.

THEY WERE ASKED A SERIES OF QUESTIONS BEFORE THE MEETING. TWO OF THEM WERE VERY HIGH LEVEL AND THE REMAINDER WERE MORE TARGETED-TYPE QUESTIONS. THE HIGH LEVEL QUESTIONS RELATED TO CIRM'S STRATEGY DURING ITS NEXT CYCLES OF FUNDING. I THINK IT WOULD SAY THAT IT WAS ALSO, AT LEAST FOR SOME OF THE PEOPLE THERE, A THOUGHT ABOUT HOW TO OPTIMIZE OR MAXIMIZE WHERE WE INVEST OUR MONEY SO THAT THERE WOULD BE THE POTENTIAL OF SOME SUSTAINABILITY. SO I DO JUST WANT TO CLARIFY IT'S NOT NECESSARILY HOW TO CLOSE OUT THE SHOP, BUT IT WAS ABOUT WHERE WE COULD DO OUR INVESTMENTS TO SEE IF THERE WAS A POTENTIAL FOR SUSTAINABILITY AS WELL. AT LEAST SOME OF THE PEOPLE MAY HAVE COME AWAY WITH THAT THOUGHT.

SO HERE ARE THE QUESTIONS. CIRM IS COMPLETING THE ALLOCATION OF FUNDS PROVIDED BY THE

CALIFORNIA BOND INITIATIVE AND SEEKS ADVICE ON THE BEST USE OF THE REMAINING FUNDS FROM THIS CYCLE OF FUNDING. HOW CAN WE BEST MAXIMIZE THE IMPACT OF CIRM IN REGENERATIVE MEDICINE WITH THESE FUNDS, WHICH AT THIS TIME IS APPROPRIATELY $600 MILLION TO BE ALLOCATED IN PROJECTS TO BE COMPLETED BY APPROXIMATELY 2021? AND WHAT UNIQUE PRIORITIES DOES THE SCIENTIFIC ADVISORY BOARD RECOMMEND FOR CIRM FOR THE NEXT FOUR YEARS CONSISTENT WITH THE GOALS AND OBJECTIVES OF THE 2012 STRATEGIC PLAN?

ON THIS DATE WE HAD A ONE-DAY MEETING, AND IT INCLUDED CIRM SENIOR MANAGEMENT IN ADDITION TO ALL THE SAB MEMBERS AND THE CIRM LEADERSHIP, AND THERE WAS ALSO A CLOSED SESSION OF THE SCIENTIFIC ADVISORY BOARD TO DRAW UP A SET OF RECOMMENDATIONS. THEY ALSO REQUESTED A CLOSED SESSION, A ONE-HOUR TELECONFERENCE, WITH CIRM GRANTEES. AND DR. TROUNSON ARRANGED FOR DRS. WEISSMAN, RUSTY GAGE, OWEN WITTE, AND LARRY GOLDSTEIN TO BE AVAILABLE FOR THIS ONE-HOUR TELECONFERENCE.

AND PRIOR TO THE MEETING THE ADVISORY BOARD WAS PROVIDED WITH A DOCUMENT SUMMARIZING OUR 2012 STRATEGIC PLAN UPDATE, OUR SCIENTIFIC PROGRAMS, OUR COLLABORATIVE FUNDING PROGRAM, OUR INDUSTRY ENGAGEMENT, AND OTHER ANCILLARY INFORMATION. THINK

OF IT AS AN UPDATE TO THE TYPES OF INFORMATION WE HAD AROUND THE TIME OF THE 2012 STRATEGIC PLAN. SO 85 TO A HUNDRED PAGES OF INFORMATION THAT THE ADVISORY BOARD WAS ASKED TO LOOK AT IN ADVANCE OF THE ACTUAL MEETING.

SO TO GET TO THE BOTTOM LINE, THEY HAD REALLY ONE MAIN RECOMMENDATION AND THEN SOME ADDITIONAL RECOMMENDATIONS THAT SEEMED TO BE SECONDARY TO THEIR MAIN RECOMMENDATION. AND THE MAIN RECOMMENDATION SEEMED TO FOCUS ON WHAT'S A TANGIBLE GOAL THAT, ONE, WOULD BEGIN TO ADDRESS THE EXPECTATIONS OF THE CITIZENS OF CALIFORNIA WHO VOTED THIS AGENCY INTO EXISTENCE IN THE FIRST PLACE, AND WHAT WOULD BE A TANGIBLE GOAL THAT WOULD BE OF INTEREST TO POTENTIAL RESEARCHERS AND INVESTORS SO THAT THERE MIGHT BE A PATH FORWARD FOR SUSTAINABILITY?

SO WITH THOSE AS THE BACKGROUND THOUGHTS, THEY ADVISED CIRM TO IDENTIFY, THROUGH SOME TYPE OF A PRIORITIZATION PROCESS WHICH THEY WERE TRYING TO FIT IN THE FOCUS SPACE OF WHERE WE ARE RIGHT NOW WITH THE STRATEGIC PLAN, THE TOP SIX TO EIGHT PROJECTS WITH A CLEAR RELEVANCE TO THE REMIT OF CIRM'S STEM CELL MISSION AND TO MAKE SURE THAT WE SET ASIDE THE FUNDING TO ENSURE THAT THOSE TOP

PRIORITIZED PROJECTS WILL HAVE THE DOLLARS TO PROCEED TO THE TYPES OF CLINICAL TRIALS THAT ARE DESIGNED TO ADDRESS WHETHER OR NOT THEY CAN SHOW DATA SUPPORTING CLINICAL PROOF OF CONCEPT AND THAT WE WORK IN A WAY TO RAPIDLY -- AS RAPIDLY AS POSSIBLE, STILL ENSURING HIGH QUALITY WITHOUT FINANCIAL IMPEDIMENTS, A WAY FOR THOSE PROJECTS TO GO FORWARD.

AS I STATED, ACHIEVING CLINICAL PROOF OF CONCEPT IS A KEY GOAL THAT THEY FELT WAS IMPORTANT TO ACHIEVE TO, ONE, ADDRESS WHAT WE SAID BEFORE ABOUT THE CITIZENS OF CALIFORNIA WHO VOTED THIS IN THE FIRST AND PLACE AND TO ATTRACT FUTURE POTENTIAL SUPPORTERS OF STEM CELL RESEARCH. AND ALSO THEY THOUGHT IT HAD A STRONG CHANCE OF SUCCESS AS LONG AS CIRM ADVANCES THE MOST PROMISING CLINICAL CANDIDATES AT WHAT THEY CALLED "AT SPEED" AND THAT WOULD REQUIRE CAREFUL ASSESSMENT AND PRIORITIZATION OF THE PORTFOLIO.

THE WAY I'M GOING TO PRESENT THIS IS I'M GOING TO HAVE THEIR RECOMMENDATION AND OUR PRELIMINARY MANAGEMENT RESPONSE JUST SO YOU CAN HEAR WHAT OUR INITIAL THOUGHTS ARE SO YOU CAN TAKE THAT INTO ACCOUNT AS YOU HAVE YOUR DISCUSSION.

WE ONLY HAD TWO DAYS TO REALLY VET THIS

INTERNALLY, BUT IT'S ACTUALLY A RATHER SHORT REPORT BECAUSE THEY STAYED PRETTY FOCUSED ON WHAT THEY WANTED TO SAY TO US.

SO OUR PRELIMINARY MANAGEMENT RESPONSE WAS THAT WE'RE ACTUALLY IN CONCURRENCE WITH THE NEED TO FOCUS AND PRIORITIZE. WE HAVE CERTAINLY COME TO THE REALIZATION THAT WE'RE NOT GOING TO TAKE 70 PROJECTS FORWARD, AND WE'RE NOT COMPLETELY SATISFIED WITH JUST LETTING ATTRITION DETERMINE WHICH ONES GO FORWARD. IT'S MORE OF A SENSE OF PROACTIVELY SELECTING WHAT YOU WANT TO TAKE FORWARD AS OPPOSED TO, WELL, IF IT DOESN'T FAIL, YOU WILL CONTINUE TO TAKE IT FORWARD.

SO OUR PRELIMINARY RESPONSE, AND I DID DISCUSS THIS WITH THE PRESIDENT ALAN TROUNSON AS WELL AS WITH OUR SENIOR MANAGEMENT TEAM, IS THAT WE ACCEPT THIS RECOMMENDATION. WE APPRECIATE THE RATIONALE BEHIND IT, AND THAT THIS WOULD REQUIRE THE NEED TO IDENTIFY A PROCESS FOR SELECTION OF THESE PROJECTS THAT WOULD INCLUDE REPRESENTATIVES FROM EXTERNAL, SO FROM THE GRANT REVIEW GROUP, FROM CDAP, FROM OTHER EXTERNAL EXPERTISE AS NEEDED, AND THAT IT WOULD ALSO REQUIRE A FORECASTING OF THE AMOUNT OF FUNDING THAT WOULD NEED TO BE SET ASIDE TO MAKE THIS HAPPEN. AND THAT RECOMMENDATIONS WOULD ALSO NEED TO

BE DEVELOPED FOR THIS PRIORITY GROUP OF PROJECTS AS TO WHERE EXPERTISE AND THE APPROACH NEEDED WOULD HAVE TO BE MODIFIED TO MAXIMIZE THE POTENTIAL AND TO ENSURE RAPID AND EFFECTIVE PROGRESS. AND THAT SEPARATELY WE WOULD HAVE TO THINK THROUGH WHAT THAT PROCESS WOULD LOOK LIKE AND, OF COURSE, PRESENT THIS TO THE ICOC IN TERMS OF YOUR PERSPECTIVES AND THOUGHTS ON THIS.

DR. STEWARD: JUST A QUICK QUESTION. WAS THERE ANY JUST EVEN PRELIMINARY DISCUSSION ABOUT WHAT THE CRITERIA MIGHT BE? I CAN IMAGINE A NUMBER OF THINGS, LIKE CLOSEST TO THE CLINIC AFFECTS THE LARGEST NUMBER OF PEOPLE, WHATEVER. I'M JUST CURIOUS WHETHER THERE WAS ANY DISCUSSION AT ALL.

DR. FEIGAL: WE DID BECAUSE, AS PART OF MY PRESENTATION TO THE BOARD, I BROUGHT IN SOME OF THE RECOMMENDATIONS FROM THE TRANSLATIONAL MEETING THAT WE HAD HELD ONE MONTH EARLIER. SO THEY WERE VERY SUPPORTIVE AND AGREED WITH UNDERSTANDING THE MECHANISM OF ACTION, ABOUT IT WOULD BE EXTREMELY HELPFUL GIVEN YOU WANT A NEAR TERM READ IF THERE WAS A BIOMARKER TO EVALUATE. THEY DIDN'T OPINE THAT MUCH ON THE SPECIFIC CELL PLATFORM, BUT THEY SAID IT DEFINITELY HAD TO HAVE A RELEVANCE TO CIRM'S MISSION AND THE STEM CELL CONNECTION.

SO WE DIDN'T HAVE A LENGTHY DISCUSSION, BUT IT WAS MORE THOSE ARE THE HIGHER POINTS OF THE TYPES OF THINGS. SO THEY DIDN'T SET THE CRITERIA. THEY PUT THE ONUS ON THE INSTITUTE AND OTHER ADVISORS TO FIGURE OUT WHAT THAT WOULD BE, BUT THEY WERE -- I CAN SAY THEY WERE IMPRESSED BY WHAT WE HAVE IN OUR PORTFOLIO. THEY WERE VERY POSITIVE ABOUT HOW WE MANAGE THINGS AND HOW WE KEEP CLOSE WATCH ON THINGS. AND THEY THOUGHT THE TRACK RECORD, TO THEM, WAS VERY POSITIVE FOR WE CERTAINLY COULD HAVE THE POTENTIAL TO REACH THIS IF WE PLAY OUR CARDS RIGHT IN TERMS OF WHERE WE INVEST.

CHAIRMAN THOMAS: ELLEN, IN TERMS OF YOU AND ALAN AND OTHERS TALKING ABOUT YOUR RESPONSE ON HERE, WHAT SORT OF TIMETABLE WOULD YOU ENVISION FOR THE VARIOUS STEPS, AND AT WHAT POINT DO YOU THINK YOU'D BE PREPARED TO REPORT BACK TO THE ICOC ON THE PROCESS?

DR. FEIGAL: I THINK WHAT WE WOULD PROBABLY DO IS THINK ABOUT THIS IN THE TWO MONTHS BETWEEN NOW AND DECEMBER TO REPORT BACK TO YOU ON WHAT A PROPOSED PROCESS COULD LOOK LIKE. AND THEN IF THERE'S AGREEMENT ON THE PROCESS, THEN WE COULD IMPLEMENT THAT. SO WE COULD RUN BY YOU WHAT WE THINK COULD BE, NOT JUST HIGH QUALITY, BUT ALSO

PRAGMATIC HOW TO PLOW THROUGH THESE DIFFERENT ITEMS. AND THEN, OF COURSE, IT WOULD TAKE TIME TO ACTUALLY DO THAT PRIORITIZATION. BUT WHAT I WOULD SUGGEST IS COMING BACK IN DECEMBER WITH A PLAN FOR WHAT THAT PROCESS COULD LOOK LIKE.

CHAIRMAN THOMAS: AND WE'VE TALKED ABOUT THE FOLLOWING QUESTION IN OUR EXECUTIVE COMMITTEE MEETING. FOR PURPOSES OF THE OTHER BOARD MEMBERS, IN MAKING THIS RECOMMENDATION TO HIGHLIGHT THE SIX TO EIGHT PROJECTS AND TO SET ASIDE FUNDING TO GET THEM THROUGH TO PROOF OF CONCEPT, WAS THERE ANY NUMBER DISCUSSED WITH RESPECT TO HOW MUCH THEY RECOMMENDED PUTTING ASIDE FOR THAT, OR ARE THEY LEAVING THAT ENTIRELY TO OUR EVALUATION AND DISCRETION?

DR. FEIGAL: THEY LEFT THAT TO OUR EVALUATION AND DISCRETION BECAUSE THEY DON'T KNOW ENOUGH ABOUT THE DETAILS OF EACH OF THESE PROJECTS NOR ABOUT THE BUDGET THAT IT WOULD REQUIRE. SO PART OF OUR COMING BACK TO YOU WITH A PROCESS IS ALSO THINKING THROUGH THE PROJECTS THAT AT LEAST WE KNOW ABOUT RIGHT NOW, SOME SORT OF BUDGET FORECASTING OF WHAT IT WOULD ACTUALLY TAKE TO TAKE IT THROUGH EARLY PHASE II CLINICAL TRIAL. AND ALSO WE'D HAVE TO GO THROUGH THE ASSUMPTIONS, IF THESE ARE LEVERAGED

TRIALS, IF THESE ARE NONLEVERAGED FUNDED TRIALS, AND SO WE'D PROBABLY HAVE TO HAVE A FEW SCENARIOS FOR THAT, BUT THEY DIDN'T STATE WHERE THE MONEY WOULD COME FROM OR WHAT THE QUANTITATIVE AMOUNT HAD TO BE, BUT THEY JUST SAID YOU'RE THE ONE IN CHARGE OF FIGURING THAT OUT AND THEN COME BACK AND TALK ABOUT WHETHER OR NOT THERE'S A PRAGMATIC, HIGH QUALITY WAY TO DO IT.

CHAIRMAN THOMAS: AND IN HIGHLIGHTING THE SIX TO EIGHT, WHICHEVER PROJECTS THEY MAY BE, THEY WERE NOT AT ALL SUGGESTING DEEMPHASIZING THE OTHER PROJECTS OR LESSENING FUNDING FOR THOSE OTHER PROJECTS THAT ARE CURRENTLY IN PROCESS. IT'S JUST LIKE THIS IS AN EXTRA BOOST, IF YOU WILL, TO PARTICULAR PROJECTS THAT WOULD BE DETERMINED BY YOUR EVALUATION GROUP.

DR. FEIGAL: I WAS SEEING IT AS AN EXPEDITED PATHWAY FOR, LIKE THE REGULATORY AUTHORITIES HAVE WHAT THEY CALL EXPEDITED PATHWAYS FOR HIGH PROFILE, THAT IT'S NOT ONLY THAT WE DO SOME THINGS DIFFERENTLY THAN THE NORMAL WAY. WE, OF COURSE, THINK WE TRY AND DO AN EXPEDITED PATHWAY, BUT MAYBE THINK CREATIVELY ABOUT HOW WE COULD DO THINGS SO THAT WE'RE EFFICIENTLY AND EFFECTIVELY MOVING THINGS THROUGH IN AS APPROPRIATE RAPID WAY AS

MANNER. SO I THINK OF IT AS AN ACCELERATED PATHWAY.

CHAIRMAN THOMAS: BUT THE POINT I WAS MAKING WAS THIS ISN'T MEANT TO BE A DEEMPHASIS OF THE OTHER PROJECTS THAT ARE IN PROGRESS. THEY WILL CONTINUE APACE, CORRECT?

DR. FEIGAL: YEAH. WE NEED TO TALK ABOUT THE BUDGET BECAUSE, DEPENDING ON WHERE THE MONEY COMES FROM, DOES IT COME FROM THE CURRENT DEVELOPMENT BIN AND HOW IS THAT AFFECTED, BECAUSE I MUST SAY OUR PURSE IS FINITE. AND SO WE JUST NEED TO FIGURE OUT IF WE NEED TO PUT EXTRA MONEY HERE, THEN THAT MEANS IT COULD HAVE SOME IMPLICATIONS FOR SOME OTHER THINGS THAT WE DO. BUT, NO, THEY WEREN'T SUGGESTING DEFUNDING OR TERMINATING THINGS, BUT THEY DO SAY WE HAVE TO FOCUS AND PRIORITIZE. AND SO THAT MAY HAVE SOME DOWNSTREAM IMPLICATIONS.

DR. KRONTIRIS: MIGHT THAT BE ONE OF THE THINGS THAT YOU WOULD WANT TO GO BACK TO THEM SPECIFICALLY TO ASK? THAT CERTAINLY MIGHT BE ONE OF THE THINGS THAT YOU WOULD SPECIFICALLY WANT TO ASK THEM ON A RETURN TO THE CONVERSATION WITH THEM. I WOULD THINK ESPECIALLY WHAT DOES EXPEDITED PATHWAY MEAN? IT USUALLY MEANS RESOURCE REGENERATION AND REDIRECTION. SO IF THAT'S IMPORTANT, I THINK IT'S SOMETHING THEY SHOULD SPECIFICALLY ADDRESS.

DR. FEIGAL: WELL, HAVE FUNDING FOR DEVELOPMENT PROGRAMS FOR EARLY TRANSLATION PROGRAMS. IT COULD ALSO BE A REDIRECTION OF FUNDING THAT'S ALREADY PUT IN THOSE BINS. SO IT COULD BE WE HAVE FUTURE SOLICITATIONS OF X, Y, AND Z. SO THERE'S WAYS THAT WE COULD THINK CREATIVELY ABOUT HOW WE COULD DO THAT. THEY DON'T KNOW ALL THE VAGARIES OF HOW WE OPERATE. SO I THINK THEY TOLD US WHAT THEY THOUGHT MORE STRATEGICALLY WE NEEDED TO DO. AND I THINK OPERATIONALLY WE NEED TO THINK ABOUT HOW WE CAN PRAGMATICALLY MAKE THAT HAPPEN.

BUT CERTAINLY THIS IS GOING TO BE AN ONGOING DIALOGUE WITH THE BOARD. WE DO PLAN TO MEET WITH THEM AGAIN. SO WE REALLY ASKED THEM SOME PRETTY HIGH LEVEL STRATEGIC ADVICE.

I DO HAVE QUITE A FEW OTHER RECOMMENDATIONS TO GO THROUGH, SO I JUST WANTED YOU TO KNOW THAT TOO.

MR. SHEEHY: AND THIS MIGHT NOT BE THE RIGHT PLACE, BUT SINCE WE OPENED IT UP. SO JUST REALLY DEALING WITH THE VERY SPECIFIC EXAMPLE AND NOT KNOWING IF THIS WOULD BE ONE THAT YOU PRIORITIZE, BUT IT WOULD SEEM TO ME THAT IF WE ARE GOING TO, SO TO SPEAK, FAST TRACK OR MOVE THESE THINGS ALONG WITH SPEED, THROW MONEY AT THEM, IS

THERE SOME THOUGHT TO A PROCESS THAT ALSO STARTS TO LEVERAGE OTHER PARTICIPANTS IN THE SAME KIND OF ARENA? LET'S THINK ABOUT, FOR INSTANCE, JUST AS AN EXAMPLE, WE HAVE THE ZAIA/SANGAMO PROJECT THAT'S PROBABLY GOING INTO CLINICAL TRIAL IN '14, RIGHT. WE'RE ALSO FUNDING SANGAMO WITH THE SAME TECHNOLOGY, SAME HEMATOPOIETIC STEM CELLS, GOING INTO BETA THALASSEMIA, I THINK -- OR WAS THAT SICKLE CELL? -- BETA THALASSEMIA. THE NIH IS ALSO FUNDING SANGAMO, VERY SIMILAR APPROACH, DISEASE TEAM. WE TALKED ABOUT THAT AT THE FORUM.

SEEMS LIKE THAT ALL THOSE PIECES SHOULD BE AS PART OF THE DISCUSSION OF FAST TRACKING THESE THINGS. THERE SHOULD ALSO BE A VERY SERIOUS LOOK AT THIS MORE LARGER LANDSCAPE AND CRAMMING THIS STUFF TOGETHER. WE SHOULDN'T BE PAYING -- WE SHOULD BE COORDINATED WITH BOTH SANGAMO AND WITH, IF THIS WERE TO BE A PROJECT, AND JUST USING THIS AS AN EXAMPLE, AND WITH THE NIH IF THIS WAS A PROJECT, THAT WE WERE GOING TO START THROWING MONEY AT BECAUSE WE WOULD PRESUMABLY HAVE THE EASIEST AND MOST ACCESSIBLE PURSE BECAUSE I'M ASSUMING YOU'RE TALKING ABOUT EXPEDITED APPROVAL PROCESSES AND REALLY TRYING TO GET THESE ACROSS THE FINISH LINE. IT SEEMS LIKE THERE OUGHT TO BE SOME THOUGHT, DO WE HAVE THE

CAPABILITY, DO WE HAVE THE STAFFING TO ACTUALLY MANAGE DOING THESE KINDS OF REALLY KIND OF SOPHISTICATED, HITTING PEOPLE WITH OUR PURSE AND JAMMING THEM TOGETHER BECAUSE WE'VE GOT THE BIGGEST PURSE, THE BIGGEST BOLUS OF MONEY IN THIS.

DOES THAT MAKE SENSE? IS THAT BEING -- WHEN YOU'RE STARTING TO LOOK AND CONCEPTUALIZE IT, I THINK IT MAY NOT BE TRUE IN EVERY DISEASE, BUT I THINK IN THIS INSTANCE THAT THAT WOULD BE AN IMPORTANT COMPONENT IF THIS IS REALLY TALKING ABOUT GETTING ACROSS THE FINISH LINE FAST.

MS. LANSING: WE DIDN'T TALK AND I WAS WAITING TO RAISE MY HAND TO SAY IT SEEMS TO ME WHEN YOU HAVE LIMITED TIME AND WE DO HAVE LIMITED MONEY, THAT THE BEST THING ANYONE CAN DO TO STRETCH THEIR DOLLARS IS TO LOOK FOR PARTNERSHIPS. THE SCIENCE ALWAYS HAS TO COME FIRST, SO WE'RE NOT GOING TO PARTNER WHERE WE DON'T BELIEVE IN THE SCIENCE. BUT IF WE ARE IN AN AREA WHERE WE THINK THERE'S REAL HOPE IN ANY DISEASE AND THE SCIENCE IS SPEAKING BACK TO US AND THERE ARE CLINICAL TRIALS ALREADY BEING DONE, I'LL TAKE CANCER WHERE THERE'S CLINICAL TRIALS BEING DONE IN SO MANY DIFFERENT AREAS. IF WE CAN ADD TO THAT, WE CAN HELP THE CLINICAL TRIAL MOVE THROUGH FASTER. AND ALSO TO ME THAT'S WHAT I WOULD

DESCRIBE AS LOW HANGING FRUIT, AND WE'RE TRYING DESPERATELY TO GET A WIN SO THAT WHEN WE GO BACK TO THE PUBLIC, WE HAVE SOMETHING TO SHOW.

AGAIN, THIS I DEFER TOTALLY TO YOU. THE SCIENCE HAS TO COME FIRST, BUT THERE ARE IN ALMOST ALL DISEASES, CERTAINLY IN CANCER, SO MANY CLINICAL TRIALS GOING THROUGH THAT ARE GOING THROUGH FAR SLOWER BECAUSE THERE IS LIMITED MONEY IN EVERY DISEASE.

DR. FEIGAL: I THINK IT'S A GREAT IDEA. I'M PRETTY FAMILIAR, HAVING WORKED IN OTHER AGENCIES WHERE MAYBE THEY DIDN'T THINK OF IT THEMSELVES, BUT WE PUT COLLABORATORS TOGETHER TO TRY AND SEE IF WE COULD REALLY MAXIMIZE AND BE MORE ALSO EFFICIENT ABOUT HOW WE'RE ADDRESSING SOME OF THE QUESTIONS. SO THAT MIGHT COME IN IN TERMS OF THE ACTUAL PROJECTS THEMSELVES, HOW WE WOULD DO THAT.

MS. LANSING: THAT COULD BE AN RFA ACTUALLY. YOU COULD ACTUALLY LOOK AT WHAT'S OUT THERE, ASK PEOPLE WHAT'S OUT THERE, AND SAY DO YOU NEED HELP BECAUSE EVERYONE NEEDS HELP NOW. GOD KNOWS. INCLUDING THE NCI TOO.

DR. FEIGAL: THANK YOU. ARE THERE OTHER QUESTIONS ABOUT THIS POINT?

SO LET ME GO INTO SOME OF THE ADDITIONAL.

THERE WERE SEVERAL OTHER QUESTIONS THAT WERE POSED TO THE SAB AND WHAT THEIR THOUGHTS WERE ON THIS TOPIC AND THEN JUST OUR PRELIMINARY RESPONSE TO IT. AND I SHOULD ADD JUST BECAUSE WE JUST GOT THIS TWO DAYS AGO, WHAT WE'LL DO IS WE'LL OBVIOUSLY SHARE THE DOCUMENT WITH YOU AFTER WE HAVE A CHANCE TO PUT IT ALTOGETHER AND SHARE THAT WITH YOU. SO YOU WILL GET IT WELL IN ADVANCE OF THE DECEMBER WORKSHOP.

THEN THERE WERE MORE SPECIFIC QUESTIONS. AND I WANT TO START OUT WITH THEY DIDN'T NECESSARILY ANSWER ALL THE QUESTIONS. THERE WERE SOME OTHER THINGS THEY WANTED TO ANSWER PERHAPS INSTEAD OF THE ONES POSED TO THEM. SO NOT ALL OF THESE QUESTIONS WERE DIRECTLY ANSWERED, BUT THAT'S WHY I WANTED TO LET YOU KNOW. WE'RE GOING TO BE INTERACTING WITH THEM ON A LONGITUDINAL BASIS. SO IF THEY'RE NOT ANSWERED NOW, WE'RE GOING TO HAVE OTHER OPPORTUNITIES TO TALK WITH THEM.

THE NEXT QUESTION WAS REALLY ABOUT OUR TRAINING GRANTS AND SHARED LABORATORY FUNDING. WE EXPLAINED TO THEM THAT THIS IS A WAY THAT WE BUILD INFRASTRUCTURE AND FUTURE CAPACITY, BUT THAT THE CURRENT PLAN, AS PER OUR STRATEGIC PLAN, IS THAT THE CURRENT TRAINING GRANTS AND THE SHARED LABORATORY FUNDING WOULD END IN THE NEXT FEW YEARS. HOWEVER,

WE BROUGHT OUT, IN TALKING WITH CALIFORNIA INSTITUTIONS AND WITH INVESTIGATORS IN THE FIELD, THEY CERTAINLY HAVE A PARTICULAR PERSPECTIVE ON THIS. AND THERE APPEARED TO BE STRONG SUPPORT FOR BOTH OF THESE PROGRAMS FROM CALIFORNIA INSTITUTIONS. AND SO WE ASKED THE SAB WHAT THEY THOUGHT, WHETHER TO CONTINUE OR CEASE THESE PROGRAMS AND ADVISE ALSO WHETHER THERE ARE PARTICULAR OPPORTUNITIES OR AREAS OF UNMET NEED IN TRAINING THAT COULD BE ACCOMPLISHED IN THE NEXT FOUR YEARS.

SO THE GIST OF WHAT THEY HAD TO SAY ABOUT THIS IS THAT THEY ALL RECOMMENDED THAT WE SHOULD CONTINUE FUNDING TRAINING PROGRAMS AT ALL LEVELS BECAUSE IT WAS CRITICALLY IMPORTANT TO DEVELOP A WORKFORCE OF TRAINED INDIVIDUALS, AND THAT THESE INDIVIDUALS WOULD BE VERY VALUABLE AS THE CELL THERAPY FIELD BURGEONED. AND THAT ON THE OTHER HAND, THEY DID NOT SEE THE RATIONALE TO HAVE US RECOMMEND CONTINUED FUNDING FOR THE 17 SHARED LABORATORIES. THEY FELT AT THIS POINT IN TIME THESE SHOULD OPERATE ON A REVENUE NEUTRAL BASIS; AND WHILE THEY WERE ESSENTIAL AS A SAFE HAVEN DURING THE NIH FUNDING BAN, THE IMPORTANCE AND THE PRIORITY OF THESE RESOURCES TO CIRM'S MISSION AND ACHIEVING SUSTAINABILITY OF EARLIER INVESTMENTS IS NOT AS

COMPELLING.

CHAIRMAN THOMAS: ELLEN, WHAT'S THE DOLLAR AMOUNT CONNECTED TO SHARED LABS AT THIS POINT?

DR. FEIGAL: I'D HAVE TO COME BACK TO YOU UNLESS SOMEBODY KNOWS IT. THIS IS DR. MICHAEL YAFFE WHO'S IN CHARGE OF THIS PROGRAM.

DR. YAFFE: OUR SUPPORT CURRENTLY IS APPROXIMATELY SEVEN AND A HALF PER YEAR. YOU REMEMBER WE DID AN EXTENSION ON THE SHARED LAB PROGRAM THAT WAS ABOUT 23 MILLION FOR THREE ADDITIONAL YEARS.

CHAIRMAN THOMAS: THANK YOU.

MR. SHEEHY: WHEN YOU TALK ABOUT TRAINING, ARE YOU INCLUDING BRIDGES IN THAT BUCKET?

DR. FEIGAL: WHEN I TALK ABOUT TRAINING, YES, WE'RE INCLUDING BRIDGES.

SO ARE THERE ANY QUESTIONS? THERE'S MORE COLOR IN AN ACTUAL REPORT THAT YOU WILL SEE IN TERMS OF WHAT THEY WERE THINKING, BUT BASICALLY THIS WAS THE BOTTOM LINE OF THE MAIN POINTS THEY WANTED TO GET ACROSS TO US.

SO OUR PRELIMINARY MANAGEMENT RESPONSE IS THAT WE SUPPORT THE CONTINUED SUPPORT OF THE TRAINING PROGRAMS. WE TOO FEEL THAT TRAINING OF THE NEXT GENERATION OF SCIENTISTS, THERE WAS A

PARTICULAR INTEREST IN THE MEDICAL SCIENTIST, WAS VERY IMPORTANT FOR THIS FIELD. IN ADDITION, WE DID TALK, NOT EXTENSIVELY BECAUSE JUST OF THE AMOUNT OF TIME WE HAD BEFORE THIS MEETING, BUT THAT WE UNDERSTAND THE RATIONALE FOR WHY THEY DON'T THINK IT'S CRITICAL FOR US TO CONTINUE EXTENDING SUPPORT FOR THE SHARED LABS. AND WE ACTUALLY AGREED WITH THAT RATIONALE AND SUGGESTION. WE RECOGNIZE ANY OF THESE DECISIONS ARE HARD, BUT THAT SOME INSTITUTIONS MAY HAVE PROBLEMS IN MAINTAINING THESE FACILITIES. BUT THE NEED FOR THESE FACILITIES HAS DECLINED WITH THE POLITICAL CHANGES OVER TIME, AND WHERE POSSIBLE, THESE FACILITIES COULD BE ABSORBED INTO GENERAL INSTITUTIONAL FACILITIES. SO THAT WAS OUR INITIAL IMPRESSION OF THESE RECOMMENDATIONS.

THE NEXT QUESTION THAT CIRM POSED WAS THE FOLLOWING: THAT THE 2012 STRATEGIC PLAN UPDATE EMPHASIZES MOVEMENT FROM THE BENCH TO THE BEDSIDE, WHICH IS, IN FACT, HOW OUR SCIENTIFIC PROGRAMS HAVE EVOLVED WITH INCREASED EMPHASIS OF THE PROPORTION OF OUR FUNDING IN THE CLINIC AS OPPOSED TO BASIC AND EARLY TRANSLATIONAL RESEARCH. DOING DEVELOPMENT PROGRAMS IS JUST A MORE EXPENSIVE ENDEAVOR. AND AS TIME MOVES ON, IT TAKES UP A LARGER PROPORTION OF CIRM'S BUDGET. NONETHELESS, THOUGH, CIRM IS STILL

STRONGLY SUPPORTIVE OF THE ENGINE OF DISCOVERY.

SO WE ASKED THEM TO DISCUSS WHETHER THERE ARE PARTICULARLY IMPORTANT AREAS OF OPPORTUNITY IN THE NEXT FOUR YEARS FOR BASIC DISCOVERY AND FOR EARLY TRANSLATIONAL RESEARCH.

SO THE MAIN GIST OF WHAT THEY CAME BACK WITH IS THAT THEY DO RECOMMEND, AND I DIVIDED IT INTO THREE PARTS, IT WAS SORT OF A THREE-PART RESPONSE. IN TERMS OF THE BASIC COMPONENT, THE SAB RECOMMENDED CONTINUED SUPPORT FOR BASIC RESEARCH, BUT DID RAISE THE ISSUE THAT THEY FELT OUR FOCUS AND RESTRICTION OF CIRM FUNDING IN SOME OF OUR RFA'S TO PROJECTS THAT REQUIRE THE USE OF HUMAN CELLS WAS TOO PRESCRIPTIVE AND DIDN'T TAKE INTO ACCOUNT THE BENEFITS THAT MODEL ORGANISM RESEARCH COULD OFFER.

IN ADDITION, IN THE AREA OF TRANSLATION, THEY NOTED THAT THE CLINICAL PROJECTS SHOULD BE CAREFULLY SELECTED SO THAT THEY ARE STRONG IN TERMS OF THEIR MECHANISTIC BASIS AND HAVE A STRONG CHANCE OF SUCCESS. THERE REALLY WAS NO CONSENSUS ON PARTICULAR AREAS OF RESEARCH. SOME FELT THAT CIRM SHOULD HAVE A FOCUS ON ES CELLS WHERE CALIFORNIA HAS ALREADY SHOWN LEADERSHIP AND ACCUMULATED EXPERTISE. ONE MEMBER SUGGESTED CIRM NOT FOCUS ON INDUCED PLURIPOTENT STEM CELLS GIVEN JAPAN'S STRONG PUSH IN

THIS AREA. WHEREAS, OTHERS THOUGHT YOU SHOULD BE BROAD, AND IT WOULD BE MOST EFFECTIVE IN TERMS OF MAXIMIZING SUCCESSES TO TAKE ADVANTAGE OF THE BROAD RANGE OF PROJECTS AND EXPERTISE IN THE STATE.

AND THEN THERE WAS A SEPARATE RECOMMENDATION REGARDING GRANT REVIEWERS. THIS MAY HAVE COME UP IN THEIR TELECON CONVERSATION OR PERHAPS IN THEIR CLOSED SESSION. BUT THE SAB NOTED THAT CIRM SHOULD CONTINUE TO OBTAIN THE VERY BEST EXTERNAL REVIEWERS. AND THEY BROUGHT UP THE ISSUE OF THERE MAY BE REVIEWER FATIGUE AND MAY BE AT TIMES DIFFICULT TO GET THE BEST PEOPLE TO JOIN. AND SO CIRM COULD CONSIDER ENHANCING FUNDING FOR THE CHAIRS OF THESE WORKING GROUPS AND TRY TO SCHEDULE THE REVIEW MEETINGS ONE TO TWO YEARS IN ADVANCE IF THERE ARE DIFFICULTIES IN RECRUITMENT.

SO THOSE WERE THE THREE BINS OF RECOMMENDATION THAT THEY HAD FOR US IN THE AREAS OF BASIC, TRANSLATION, AND GRANT REVIEW.

SO OUR PRELIMINARY RESPONSE IN THEIR THOUGHTS ABOUT THE BASIC IS WE AGREE THAT MANAGEMENT SHOULD CONTINUE TO SUPPORT FUNDING OF BASIC SCIENCE. WE DO, HOWEVER, DO HAVE A PRIORITY OF SUPPORTING TRANSFORMING BASIC RESEARCH, AND THAT HAS BEEN THE FOCUS OF SOME OF OUR RECENT RFA'S. WE THOUGH HAVE

HAD AND CONTINUE TO THINK THERE IS A NEED FOR HUMAN CELLS RATHER THAN CELLS OF MODEL SYSTEMS. AND WE'VE HAD THAT PRIORITY FROM THE BEGINNING. PART OF IT IS BECAUSE WE'RE WORKING WITH HUMAN CELLS. WE'RE TRYING TO FOCUS ON MODELS THAT MIGHT MORE CLOSELY MIMIC THE HUMAN CONDITION. AND THESE ARE ALSO NOT EXCLUSIVE OF A LOT OF PRELIMINARY WORK BEING DONE IN AN ANIMAL MODEL AND ALSO RECOGNITION OF FACT THAT A VERY SUBSTANTIVE PORTION OF FUNDING FROM THE NATIONAL INSTITUTES OF HEALTH GOES TO ANIMAL MODEL SYSTEMS.

SO, ONE, IT WAS THOUGHT WE WANT TO MAINTAIN THE FOCUS ON HUMAN CELLS BECAUSE THERE ARE OTHER FUNDING STREAMS THAT ARE FUNDING THESE OTHER TYPES OF MODELS; BUT, IN ADDITION, WE DO RECOGNIZE WE DON'T WANT TO MISS SOMETHING THAT COULD BE QUITE TRANSFORMATIVE. SO WE DO HAVE SOME EXAMPLES IN OUR FUNDING PORTFOLIO OF ALLOWING INVESTIGATORS TO LOOK AT ANIMAL MODELS, USUALLY IN THE CONTEXT OF ALSO LOOKING AT HUMAN CELLS, AND WE DO HAVE A TRACK WITH OUR RECENT RFA IN BASIC BIOLOGY OF WHAT WE CALL TRANSFORMATIVE WHERE I THINK EVERYTHING THAT CAME IN WAS ON OTHER ANIMAL MODEL SYSTEMS.

SO WE DO THINK THERE MAY BE CERTAIN INSTANCES WHERE WE SHOULD TRY AND MAKE SURE WE'RE

CAPTURING THOSE SYSTEMS THAT COULD BE PARTICULARLY INNOVATIVE AND NOVEL.

I ALSO THINK, AS YOU KNOW, AND THIS ISN'T A REASON NOT TO DO SOMETHING, BUT WE ALSO ALREADY GET HUNDREDS OF APPLICATIONS THAT COME IN IN THE AREA OF HUMAN CELLS. AND WE PROBABLY DON'T HAVE THE CAPACITY TO LOOK AT THOUSANDS OF APPLICATIONS. SO WE ARE ALSO CONCERNED ABOUT OPENING UP THE GATES, SO TO SPEAK, IN TERMS OF WHAT COULD COME IN.

WE DO BELIEVE WE SHOULD CONTINUE TO EMPHASIZE THE STUDY OF HUMAN CELL SYSTEMS, BUT WE DO TAKE THEIR POINT AND WILL ENSURE THAT ANY LIKELY TRANSFORMING WORK IN OTHER ORGANISMS COULD BE SUPPORTED IN SELECTION OF GRANTS FOR REVIEW.

CHAIRMAN THOMAS: ELLEN, WHAT'S THE FULL RANGE OF MODEL SYSTEMS THAT WE'VE FUNDED OUTSIDE OF HUMAN?

DR. FEIGAL: I'D HAVE TO -- WE ACTUALLY CAN DO A PORTFOLIO ANALYSIS OF THAT. I DON'T HAVE IT AT THE TOP OF MY HEAD RIGHT NOW. I DON'T KNOW IF -- I'M SURE IF I TALKED TO DR. KELLY SHEPHERD, SHE COULD GET THAT TO ME QUITE QUICKLY.

DR. YAFFE: WE HAVE FUNDED PROJECTS FROM PLANARIA, FLAT WORMS, TO HUMANS. WE FUNDED PROJECTS IN DROSOPHILA, FRUIT FLIES; C ELEGANS, WORMS; A LOT

OF PROJECTS WITH MOUSE. AND SO WE HAVE FUNDED THE SPECTRUM. THE VAST MAJORITY, OF COURSE, ARE WITH HUMAN CELLS IN CULTURE.

CHAIRMAN THOMAS: THANK YOU, MICHAEL.

DR. FEIGAL: WERE THERE ANY MORE QUESTIONS ABOUT ANIMAL MODELS?

MR. SHEEHY: AGAIN, MAYBE THIS IS NOT THE RIGHT PLACE, AND I'M KIND OF ANTICIPATING GETTING TO THE END OF THIS DISCUSSION ABOUT TRANSLATIONAL. BUT IT SEEMS TO ME LIKE WHAT WE'RE TALKING ABOUT IS A BROAD PRIORITIZATION PROCESS. SO IT WOULD BE HELPFUL FOR ME AS A BOARD MEMBER, WHEN YOU'RE THINKING ABOUT THIS, TO ALSO OVERLAY WITH THE SCIENTIFIC QUESTIONS THE INFRASTRUCTURE QUESTIONS. IT SEEMS LIKE ON ONE HAND WE'RE GOING TO TAKE OUR MOST PROMISING PROJECTS AND SHOVE THEM TO COMPLETION.

ON THE OTHER HAND, WE'RE GOING TO CONTINUE SOME WORK AT A DIFFERENT LEVEL BEFORE THE CLINICAL STAGE. AND WE SHOULD OVERLAY THAT WITH THE DIALOGUES WITH THE PROGRAMS THAT WE HAVE SET UP ACROSS CALIFORNIA WITH SOME SORT OF SENSE ABOUT HOW TO METER THIS OUT AND WHAT PROPORTIONS OVER WHAT PERIOD OF TIME IN ORDER TO SUSTAIN THE INFRASTRUCTURE WE BUILT. WE BUILT BUILDINGS. WE'VE

HIRED SCIENTISTS. WE HAVE A LOT OF WORK THAT'S GOING ON. NIH IS NOT LIKE FOLKS ARE GOING TO GRADUATE FROM OUR FUNDING TO NIH FUNDING. THAT MAY BE A PROBLEM GOING FORWARD. WE CREATED THIS HUGE INFRASTRUCTURE IN CALIFORNIA. IT SEEMS TO ME THAT THERE SHOULD BE SOME SORT OF ANALYSIS THAT COMBINES THE PRIORITIZATION WITH SUSTAINING THE INFRASTRUCTURE THAT WE CREATED.

WE'RE NOT TALKING ABOUT GETTING A QUICK HIT OUT OF THIS. THIS REALLY SOUNDS TO ME LIKE THEY'RE SAYING KEEP YOUR PROGRAMS GOING, KEEP WHAT YOU BUILT, SUSTAIN WHAT YOU BUILT. IT SEEMS LIKE PARTIALLY THAT'S A SCIENCE QUESTION, BUT IT'S ALSO RECOGNIZING WHAT IS THE MIX OF PROGRAMS WE NEED TO SUSTAIN WHAT WE'VE BUILT. WHEN WE COME BACK IN DECEMBER, IT WOULD BE HELPFUL TO HAVE A PROCESS TO ADD THAT AS A DIMENSION TO THE ANALYSIS.

DR. FEIGAL: SO TO THE TRANSLATIONAL RESEARCH, WE ACTUALLY AGREE THAT THERE SHOULD BE A STRONG MECHANISTIC BASIS AS MUCH AS POSSIBLE. WE DID NOT FEEL FROM WHAT WE READ IN THE REPORT THERE WAS ACTUALLY A CONSENSUS ON LOOKING AT A PARTICULAR CELL TYPE, WHETHER IT'S IPS, ES CELL. THERE REALLY WASN'T A CONSENSUS IN WHAT WE HEARD AT A HIGH LEVEL. THIS COULD BE SOMETHING THAT WE EXAMINE WITH THEM IN

A MORE IN-DEPTH DISCUSSION.

AT THIS POINT IN TIME, THOUGH, IN TERMS OF WHAT WE'RE TRYING TO DO AND NOT KNOWING WHERE THE FIELD COULD LEAD, AND IT COULD BE ONE APPROACH IS GOOD IN A PARTICULAR AREA AND A DIFFERENT CELL TYPE APPROACH IS APPROPRIATE IN ANOTHER, THAT IT WOULD PROBABLY BE IN THE BEST INTEREST OF THE INSTITUTE TO PURSUE A BROAD RANGE OF SCIENTIFICALLY COMPELLING STEM CELL PLATFORMS.

IN TERMS OF GRANT REVIEWERS -- DID YOU HAVE A COMMENT?

MR. TORRES: IT'S A PROCESS QUESTION. YOU'RE GOING TO CONTINUE TO MEET WITH THE SCIENTIFIC ADVISORY BOARD TO GO OVER THEIR INITIAL RECOMMENDATIONS, CORRECT? SO THESE ARE VERY PRELIMINARY MANAGEMENT RESPONSES.

DR. FEIGAL: THESE ARE PRELIMINARY ONLY BECAUSE WE'VE HAD TWO DAYS TO GO THROUGH THEM. BUT I DON'T SEE THAT -- I MEAN THERE MAY BE NUANCES THAT HAVEN'T BEEN BROUGHT OUT. I CAN'T SAY THERE HAS BEEN A STRONG DIFFERENCE OF OPINION ABOUT THE MANAGEMENT RESPONSE IN TALKING WITH PEOPLE.

MR. TORRES: I APPRECIATE YOU AND THE SCIENCE STAFF WORKING SO DILIGENTLY TO GET SOME RESPONSE TO US TODAY, AND IT'S VERY, VERY ADMIRED.

SECONDLY, IS IT THE INTENT OF THIS CHAIR THAT THE SCIENTIFIC ADVISORY BOARD MEMBERS OR ONE OR TWO OF THEM MIGHT ADDRESS US AT THE DECEMBER MEETING?

AND SECONDLY, ANOTHER PROCESS QUESTION. SHOULD THE SCIENCE SUBCOMMITTEE TAKE THE TIME TO REVIEW THESE RECOMMENDATIONS WITH STAFF AT A LATER DATE, BUT PRIOR TO OUR FULL DECEMBER MEETING?

DR. FEIGAL: I THINK THE WAY IT WAS SET UP, IT WAS SET UP TO BE AN ADVISORY BOARD TO THE SCIENTIFIC PART OF THE INSTITUTE. AND THAT THROUGH THE SCIENTIFIC STAFF, WE WOULD COMMUNICATE THE FINDINGS TO YOU AS OPPOSED TO A DIRECT INTERACTION WITH THE BOARD.

MR. TORRES: ALL RIGHT. IT STILL REQUIRES US AS A BOARD TO RESPOND SINCE WE'RE GOING TO HAVE TO MAKE MAJOR DECISIONS, AS SHERRY AND JEFF AND OTHERS HAVE OPINED, WITH RESPECT TO HOW WE UTILIZE THE CURRENT FUNDING AND ANY FUTURE FUNDING WE MIGHT HAVE. SO I'M SAYING WHEN IS THAT GOING TO TAKE PLACE? IS THE SUBCOMMITTEE GOING TO MEET FIRST AND THEN PRESENT THEIR RECOMMENDATIONS TO US AT THE FULL MEETING IN DECEMBER, OR ARE WE JUST GOING TO COME BACK IN DECEMBER AND DO A FULL HEARING?

DR. FEIGAL: I THINK THE ISSUE IS THIS IS

A PRELIMINARY DISCUSSION RIGHT NOW, AND PROBABLY DECEMBER IS WHERE WE WOULD HAVE SOME FURTHER DIGESTION OF THE ISSUES AND COME BACK TO YOU FOR MORE IN-DEPTH DISCUSSION.

MR. TORRES: I JUST FEEL MANY TIMES A SUBCOMMITTEE COULD GET MORE INTO THE WEEDS OR DRILL DOWN MORE THAN WE AS A FULL BOARD CAN GIVEN THE TIME THAT WE HAVE. IT'S JUST A SUGGESTION. MIGHT NOT THAT BE A GOOD APPROACH AS WE MOVE FORWARD?

CHAIRMAN THOMAS: I THINK, SENATOR TORRES, THAT IS A GOOD IDEA. PERHAPS SHORTLY IN ADVANCE OF THE, SO AS TO GIVE YOU GUYS FULL TIME TO DO WHAT YOU NEED TO DO, SHORTLY IN ADVANCE OF THE DECEMBER MEETING, WE COULD CONVENE THE SCIENCE SUBCOMMITTEE JUST TO AIR OUT SOME OF THESE ISSUES.

A QUESTION I HAVE, FOR EXAMPLE, WE'RE TALKING ABOUT WHAT WILL BE PRESENTED IN DECEMBER. WE IMMEDIATELY HAVE A SIGNIFICANT FUNDING ISSUE COMING UP THE FOLLOWING DAY IN THE FORM OF THE DT III AWARDS. AND TO THE EXTENT THAT WE WOULD BE CONTEMPLATING PUTTING ASIDE SIGNIFICANT AMOUNT OF MONEY OR RESERVING IT, IF YOU WILL, FOR PUSHING THE SIX TO EIGHT THROUGH TO PROOF OF CONCEPT, THAT COULD IMPACT ON THE DECISIONS MADE THE FOLLOWING DAY ON DT III.

SO IT WOULD BE HELPFUL TO HAVE MORE THOUGHT OUT THAN LESS THE AMOUNT OF MONEY THAT ONE MIGHT NEED FROM A BUDGETING PERSPECTIVE FOR THE PROJECTS THAT WE'RE PLANNING TO PUSH THROUGH.

DR. FEIGAL: WHAT I TRIED TO EXPLAIN IS IT'S NOT JUST THE BUDGET, BUT WE WOULD COME BACK TO YOU WITH WHAT WE THINK THE FUNDING SET ASIDE WOULD BE IN DECEMBER. IT WOULDN'T JUST BE A PROCESS.

CHAIRMAN THOMAS: THAT'S GREAT. YOU WOULD PLAN ON HAVING THOSE NUMBERS BY DECEMBER?

DR. FEIGAL: CORRECT.

CHAIRMAN THOMAS: PREFERABLY BY THE SCIENCE SUBCOMMITTEE THAT WOULD PRECEDE THAT BY JUST A LITTLE BIT.

DR. FEIGAL: SURE.

IN TERMS OF WHAT WE WERE TALKING ABOUT HERE, I THINK WE WERE AT THE GRANT REVIEW SECTION OF OUR PRELIMINARY RESPONSE. THAT WE COMPLETELY AGREE THAT WE WANT THE BEST AVAILABLE REVIEWERS TO CONTINUE TO BE CHOSEN FOR ASSESSING GRANTS. AND ACTUALLY OUR REMUNERATION TO REVIEWERS ALREADY FAVORABLY COMPARES TO NIH AND OTHER FOUNDATIONS. BUT THE MAJOR POINT WITH WHETHER OR NOT PEOPLE CAN ATTEND OR NOT IS USUALLY ONE OF TIME. IT'S NOT ABOUT MONEY. AND THAT IT'S USUALLY TIME OF THE

REVIEWERS THAT'S THE RATE-LIMITING STEP. WE HAVE A LOT OF REVIEWS, WE HAVE SOME THAT GO SEVERAL DAYS IN DURATION, AND IT'S DIFFICULT FOR PEOPLE TO EXPEND A LARGE AMOUNT OF TIME. PARTICULARLY IF THEY'RE STILL ACTIVELY WORKING AND IN A LAB AND TRYING TO GET WORK DONE, IT REALLY IS A TIME ISSUE.

AS AN AGENCY, WE ACTUALLY HAVE A REQUIREMENT BUILT INTO THE PROPOSITION ABOUT HOW MANY REVIEWERS NEED TO BE ON-SITE, AND IT'S A RATHER LARGE GROUP, AND IT HAS TO BE OF A CERTAIN COMPOSITION. SO WE HAVE PARAMETERS THAT WE NEED TO WORK WITHIN. AND SO IT DOES MAKE IT CHALLENGING BECAUSE OF THE LARGE NUMBERS OF PEOPLE THAT HAVE TO COME AND THE FACT THAT THEY HAVE TO BE ON SITE.

WE DON'T HAVE A GREAT ANSWER. I WISH WE COULD SCHEDULE THINGS TWO YEARS IN ADVANCE, BUT WE ACTUALLY SCHEDULE THINGS ONCE WE HAVE SORT OF THE TENTATIVE BOOKMARKS. BUT UNTIL WE SEE THE CONTENT OF WHAT COMES IN AS AN APPLICATION, WE CAN'T REALLY GET THE REVIEWER IN ADVANCE. SO WE HAVE A POOL OF PEOPLE THAT WE CAN CALL ON. BUT MAYBE THERE ARE WAYS THAT WE COULD BE MORE EFFICIENT IN TERMS OF HOW WE DO IT.

BUT TO DATE I THINK DR. SAMBRANO HAS BEEN PRETTY SUCCESSFUL IN RECRUITING OUTSTANDING TALENT

TO THESE REVIEW SESSIONS. AND TO DATE THE MAJOR RATE-LIMITING STEP HAS BEEN TIME AND NOT MONEY.

CHAIRMAN THOMAS: I PRESUME THAT THE SAB WAS VERY POSITIVE ON THE POOL OF REVIEWERS THAT DR. SAMBRANO HAS PULLED TOGETHER. THAT WAS CERTAINLY MY UNDERSTANDING.

DR. FEIGAL: MY ONLY UNDERSTANDING, THERE WASN'T AN EXTENSIVE DISCUSSION WITH CIRM STAFF ABOUT OUR PROCESS OR THE COMPOSITION OF THE REVIEWERS. THAT MIGHT BE SOMETHING THEY'D BE INTERESTED IN HEARING MORE ABOUT.

CHAIRMAN THOMAS: JUST FOR THE RECORD, GIL, WE THINK YOU DO AN OUTSTANDING JOB. IT'S VERY DIFFICULT TO GET EVERYBODY PULLED TOGETHER AND TO HAVE THE LEVEL OF SOPHISTICATION AND TALENT THAT YOU'VE BEEN ABLE TO GET FOR US. AND THE BOARD GREATLY APPRECIATES ALL YOUR WORK IN THAT REGARD.

DR. FEIGAL: I THINK ANECDOTALLY WE HAVE PEOPLE VOLUNTEERING TO BE A MEMBER BECAUSE THEY'RE SO INTERESTED IN THIS GRAND EXPERIMENT OF THIS AGENCY. SO ACTUALLY I THINK PEOPLE HAVE BEEN PRETTY POSITIVE ABOUT TRYING TO INTERACT WITH THE AGENCY AND ADD VALUE IN WHATEVER WAY THEY CAN. AT LEAST THAT'S THE FEEDBACK I'VE HEARD FROM SOME OF THE REVIEWERS.

CHAIRMAN THOMAS: I ALWAYS HAVE SIDEBAR DISCUSSIONS WITH REVIEWERS AT OUR GRANTS WORKING GROUP, AND WITHOUT FAIL THEY BELIEVE THAT WHAT WE'VE GOT GOING HERE IS SOMETHING THAT'S EXCEPTIONALLY VALUABLE. THEY ARE ABSOLUTELY ALWAYS ENVIOUS THAT WE HAVE THE PROGRAM THAT WE DO AND ARE VERY ENTHUSIASTIC ABOUT PARTICIPATING IN THE PROCESS AND DOING WHAT THEY CAN TO ADVANCE THE CAUSE. SO I FULLY AGREE WITH YOUR COMMENTS, DR. FEIGAL.

DR. FEIGAL: THE NEXT QUESTION THAT WE POSED TO THE SAB IS WHAT'S YOUR ADVICE ON HOW TO BETTER ENGAGE THE PRIVATE SECTOR TO PARTNER WITH CIRM SO THAT WE CAN ENABLE THE TRANSLATIONAL AND CLINICAL DEVELOPMENT PROGRAMS TO MOVE FURTHER, AND SO THAT'S FURTHER OPPORTUNITIES FOR ACHIEVING CLINICAL PROOF OF CONCEPT AND, IF SUCCESSFUL, TOWARDS FDA APPROVAL AND COMMERCIALIZATION.

AND THEN THERE WERE VERY SPECIFIC QUESTIONS ABOUT WHETHER OR NOT CIRM FUNDING SHOULD SUPPORT CALIFORNIA CELL MANUFACTURING CAPACITY, PHASE III STUDIES, WHAT TYPES OF COST AND FACILITIES WOULD BE NECESSARY? IS IT REASONABLE TO FUND THOSE WITHOUT PUBLIC/PRIVATE PARTNERSHIPS?

I GUESS ONE CAVEAT I MIGHT HAVE IS I DON'T KNOW IF -- YOU WILL SEE THEY DIDN'T REALLY ANSWER

THAT QUESTION. AND SO I DON'T KNOW IF THEY DIDN'T FEEL IT WAS REALLY WITHIN THEIR RADAR SCREEN OF THINGS THEY WOULD BE KNOWLEDGEABLE ENOUGH TO ANSWER, OR WHETHER OR NOT IT JUST DIDN'T COME UP IN THE OTHER ISSUES THAT THEY WERE TALKING ABOUT. BUT ANYWAY, WE ACTUALLY DON'T HAVE A SPECIFIC ADVICE ABOUT MANUFACTURING.

BUT THEY DID PROVIDE SOME PERSPECTIVES AT LEAST ON WHAT THEY THOUGHT OF THE VIEW THEY HAD OF OUR INTERACTIONS BETWEEN CIRM AND THE COMMERCIAL SECTOR. AND OVERALL THEY ACTUALLY HAD A POSITIVE VIEW ON HOW WE INTERACT WITH THE COMMERCIAL SECTOR. THEY DID NOTE THE ADVANTAGE OF LEVERAGING FUNDING FROM THE COMMERCIAL SECTOR FOR EXTERNALLY VALIDATING THE QUALITY OF THE SCIENCE AND THE LIKELIHOOD OF SUCCESS FOR OUR PROJECTS. THEY ALSO RECOMMENDED FOR THE TOP PRIORITIZED SET OF PROJECTS, HOWEVER, THAT IT IS IMPORTANT TO ENSURE THAT THEY CAN BE FUNDED WITHOUT REQUIRING MATCHED LEVERAGE FUNDING UNTIL AFTER PHASE IIA WHEN SUCCESSFUL PROGRAMS SHOULD READILY OBTAIN EXTERNAL SUPPORT.

CHAIRMAN THOMAS: CAN YOU JUST REMIND THE BOARD WHAT THE REQUIREMENTS ARE AT THE MOMENT FOR LEVERAGED FUNDING?

DR. FEIGAL: WE ACTUALLY HAVE NO

REQUIREMENTS FOR LEVERAGED SUPPORT FROM INDUSTRY EXCEPT FOR THE STRATEGIC PARTNERSHIP PROGRAM. THERE'S NO REQUIREMENT IN ANY OF THE OTHER PROGRAMS. WHAT WE HAVE REQUIRED FOR THOSE WHO ARE WORKING IN SMALL MOLECULES AND BIOLOGICS, WHICH HAS A WELL-SUPPORTED INDUSTRY BEHIND IT, THAT THERE BE AT LEAST 25 PERCENT LEVERAGED FUNDING THAT CAN COME FROM ANYWHERE. IT CAN COME FROM OTHER GRANTS. IT CAN COME FROM FOUNDATIONS. IT CAN COME FROM INSTITUTIONAL SUPPORT. IT WAS JUST AN ISSUE OF OUR PURSE IS FINITE. THIS IS A WELL-DEVELOPED AREA THAT INDUSTRY KNOWS WELL. ALTHOUGH IT'S POSSIBLE IT COULD COME FROM INDUSTRY, THERE'S NO REQUIREMENT FOR IT TO COME FROM INDUSTRY. IT'S ONLY THE STRATEGIC PARTNERSHIP WHERE IT'S REQUIRED.

SO OUR PRELIMINARY RESPONSE IS THAT WE AGREE WHERE APPROPRIATE TRANSLATIONAL AND DEVELOPMENT STUDIES CAN BE DRIVEN INSIDE ACADEMIA. HOWEVER, WE ALSO BELIEVE, AND IT'S NOT BECAUSE OF JUST THE DOLLAR ISSUE, THAT THE PRECLINICAL AND THE EARLY CLINICAL TRIALS NEED EXPERTISE THAT GENERALLY RESIDES IN INDUSTRY AND THAT CONSULTANTS AND PARTNERSHIPS SHOULD BE INTEGRATED INTO ACADEMIC TEAMS, THAT INDUSTRY DOES NEED TO BE ENCOURAGED TO PARTICIPATE IN CLINICAL TRIALS WITH TEAMS WORKING

ACROSS THE PORTFOLIO AND PARTICULARLY FOR THOSE PROJECTS THAT INCLUDE SMALL MOLECULES AND BIOLOGICS. HOWEVER, WE DO AGREE IT'S IMPORTANT NOT TO ADVERSELY PENALIZE TEAMS WHO HAVE VERY SOUND AND STRONG COMPETITIVE PROJECTS WHERE INDUSTRY DOES NOT WANT TO BUY IN.

SO IF THERE'S SOMETHING PARTICULARLY COMPELLING AND STRONG, AND FOR WHATEVER REASON IT CAN'T ATTRACT THAT KIND OF LEVERAGE, THEN DON'T PENALIZE THAT TEAM IF WE THINK IT'S A REALLY STRONG WAY TO MOVE FORWARD.

THE NEXT QUESTION WAS REALLY ABOUT -- I KNOW IT LOOKS SORT OF VAGUE HERE. BUT BASICALLY THE QUESTION WAS POSED TO THEM SHOULD WE ENGAGE OUR COLLABORATING PARTNERS, AND I DON'T THINK IT'S IN THE FORMAL SENSE OF OUR CFP'S. I JUST THINK IT WAS WITH A VARIETY OF DIFFERENT PEOPLE WITH WHOM WE WORK IN A MAJOR PROJECT AS A FLAGSHIP TO SET THE FIELD IN MOTION AS WE WIND DOWN. SO THAT WAS THE WAY THE QUESTION WAS POSED.

AND WHAT HAPPENED, MAYBE IT WAS DURING THE CLOSED SESSION, THEY WERE PRESENTED WITH WHAT I'D CALL A STRAWMAN PROPOSAL IN A PARTICULAR THERAPEUTIC AREA. AND SO THEIR PERSPECTIVES FROM HEARING ABOUT SOME MAJOR PROJECT IN A PARTICULAR THERAPEUTIC AREA

AS A STRAWMAN PROJECT, THEY THOUGHT THE UNCERTAINTY OF THE SCIENCE IN ANY ONE THERAPEUTIC AREA WOULD MAKE THIS A VERY HIGH RISK STRATEGY. AND THEY WERE AGAINST CONSOLIDATING PROGRAMS IN THIS WAY.

THEY DID, HOWEVER, FEEL IF AN OPPORTUNITY AROSE TO PARTICIPATE IN A MAJOR PROJECT IN A SINGLE THERAPEUTIC AREA WHERE THERE WAS A PARTNERSHIP THAT PROVIDED SIGNIFICANT FINANCIAL LEVERAGE TO CIRM, IT MIGHT BE AN EFFECTIVE USE OF RESOURCES PROVIDED THAT IT DIDN'T CONSTRAIN PROGRESSION OF OUR PRIORITIZED PORTFOLIO.

AND OUR INITIAL RESPONSE TO THAT WAS THAT WE ACTUALLY AGREED THAT A MAJOR FLAGSHIP PROJECT THAT WOULD COMMIT A LARGE AMOUNT OF CIRM FUNDS WOULD NOT BE APPROPRIATE AT THIS STAGE OF CIRM'S LIFE. HOWEVER, IF THERE WAS A SIGNIFICANT NATIONAL OR INTERNATIONAL PROJECT THAT EVOLVED IN TIME, IT MIGHT BE APPROPRIATE FOR THE ICOC TO CONSIDER SOME INVOLVEMENT TOGETHER WITH OTHER RELEVANT AGENCIES.

ACTUALLY THE LAST QUESTION TO THEM WAS MORE ABOUT HOW WOULD YOU DEFINE SUCCESS? SO IF YOU LOOK TO THE FUTURE, YOUR AN EXTERNAL BOARD, MOST OF YOU DON'T LIVE IN CALIFORNIA, BUT YOU KNOW ABOUT WHY WE WERE CREATED AND WHAT WE'RE TRYING TO DO. HOW WOULD YOU BEST MAKE THE CASE THAT CIRM WAS A GREAT

INNOVATION IN PUBLIC FUNDING OF CUTTING-EDGE SCIENCE, AND HOW WOULD YOU MAKE THE CASE WHETHER IT HAS DELIVERED AND COULD CONTINUE TO DELIVER IN THE FUTURE VALUE TO THE CITIZENS OF CALIFORNIA AND TO THE FIELD OF REGENERATIVE MEDICINE?

SO IT WASN'T ALLEGING THAT MET THAT GOAL. IT WAS JUST SAYING WHAT DO YOU SEE AS THE MILESTONES OF SUCCESS? WHAT DO YOU THINK ARE TANGIBLE BENEFITS THAT YOU COULD CLEARLY STATE WOULD BE IMPORTANT?

AND THEY ACTUALLY CAME BACK TO THEIR ORIGINAL THEME. THEY THOUGHT THE MOST TANGIBLE THING TO DO WOULD BE TO ADVANCE A PROJECT TO THE STAGE OF CLINICAL PROOF OF CONCEPT, AND THAT WOULD BE A VERY IMPORTANT CASE TO MAKE TO THE PUBLIC, AND THAT CARE MUST BE TAKEN TO ENSURE THAT THE MOST PROMISING PROJECTS ARE SUPPORTED THROUGH TO THIS STAGE BY CIRM FUNDING.

AND THEN THE REST OF IT IS A BIT OF AN ACCOLADE TO CIRM, BUT THEY ACTUALLY FELT FROM LOOKING AT WHAT WE'VE DONE, HEARING ABOUT WHAT THE ISSUES ARE, THEY ACTUALLY THINK THE CASE THAT CIRM HAS BEEN TRANSFORMATIVE IN THIS EXCITING, EMERGING FIELD OF BIOMEDICAL SCIENCE WAS SELF-EVIDENT TO THEM. BUT WHAT THEY DID REMARK IS THE LEVEL OF ACTIVITY IN THIS FIELD IN CALIFORNIA, ALTHOUGH IT'S

EXTRAORDINARILY HIGH, THERE ARE MANY EXCELLENT PROGRAMS BEING SUPPORTED BY CIRM THAT WOULD HAVE FAILED TO BE SUPPORTED GIVEN THE LIMITED AMOUNTS OF FUNDING AVAILABLE FOR THIS FIELD WHEN CIRM WAS ESTABLISHED AND THAT IT'S YIELDED A LARGE NUMBER OF EXTREMELY WELL-TRAINED STUDENTS AND INVESTIGATORS THAT ARE SUPPORTED DIRECTLY OR INDIRECTLY BY CIRM, AND THAT THERE'S A CRITICAL MASS IN A NUMBER OF THE MAJOR ACADEMIC CENTERS AROUND CALIFORNIA THAT HAS ALLOWED IT TO COMPETE INTERNATIONALLY, AND THAT THE COMMERCIAL ENVIRONMENT FOR REGENERATIVE MEDICINE IN CALIFORNIA HAS THRIVED AS A RESULT OF CIRM INTERVENTION. IN THEIR NEXT RECOMMENDATION THEY NOTE THAT IT SEEMS TO BE SO UNDER-RECOGNIZED IN TERMS OF THE TYPES OF THINGS THAT CIRM HAS ALREADY ACCOMPLISHED.

BUT GOING BACK TO WHAT THEY THOUGHT WAS THE MAIN TANGIBLE PRODUCT THAT WOULD MEAN SOMETHING TO THE CITIZENS OF CALIFORNIA AND TO FUTURE RESEARCH SUPPORTERS, THEY STAYED SPECIFIC ON THAT CLINICAL PROOF OF CONCEPT AS BEING A VERY IMPORTANT GOAL FOR US TO ACHIEVE.

OTHER RECOMMENDATIONS THAT TIE TO THIS IS THAT THE SAB NOTED THAT CIRM, DESPITE ITS CONSIDERABLE ACHIEVEMENTS, DOES NOT APPEAR TO HAVE

RECEIVED THE ATTENTION NOR THE ATTRIBUTION THAT MANY EQUIVALENT FUNDING BODIES WOULD HAVE HAD FOR THEIR CONTRIBUTION TO SUCCESSFUL SCIENCE, AND THAT THEY STRONGLY SUGGEST THAT CIRM RAMP UP ITS OUTREACH ACTIVITIES BOTH TO IMPROVE THE CALIFORNIA PUBLIC'S AWARENESS OF WHAT THE INSTITUTE IS DOING AND ITS UNIQUENESS IN THE WORLD, ITS SUCCESSES SO FAR, AND THE POTENTIAL OF STEM CELL RESEARCH TO ADVANCE TREATMENT OF DISEASES AND INJURIES.

THEY FELT THAT THE CIRM BRAND INTERNATIONALLY AND EVEN NATIONALLY IS LIMITED AND THAT IT NEEDED TO BE CORRECTED. THEY DIDN'T SUGGEST THE WAYS TO DO IT. THEY WERE JUST SAYING THIS SEEMS TO BE A REAL ISSUE.

AND OUR PRELIMINARY MANAGEMENT RESPONSE TO THIS, WITHOUT BEING SPECIFIC, IS THAT WE HAVE RECOGNIZED THAT WE NEED TO CONTINUE TO ELEVATE RECOGNITION IN LEADING GLOBAL DEVELOPMENTS IN STEM CELL RESEARCH AND MEDICAL APPLICATIONS. AND WE DO NEED TO CONTINUE TO WORK ON WAYS TO MORE EFFECTIVELY ASSURE THAT ADVANCES AND DEVELOPMENTS THAT ARISE FROM CIRM-SUPPORTED ACTIVITIES ARE EFFECTIVELY TRANSMITTED TO THE SCIENTIFIC COMMUNITY AND THE PUBLIC.

AS YOU KNOW, THAT WAS A MAJOR THEME OF A

PREVIOUS ASSESSMENT. WE PUT IN PLACE A COMMUNICATION HEAD TO REALLY HELP WITH THE -- ENHANCE THE PUBLIC COMMUNICATION PART. AND SO AT LEAST THAT'S AN INITIAL THOUGHT OF WORKING WITH OUR CIRM COMMUNICATIONS PARTICULARLY RELATING TO COMMUNICATION TO THE PUBLIC.

CHAIRMAN THOMAS: ELLEN, UNDERSTANDING THAT THESE PROJECTS ARE ALL IN VARYING DEGREES OF GOING FORWARD, DID THEY GIVE ANY OPINION ON THE VALUE OF SOME OF THE MAJOR INITIATIVES WE'RE UNDERTAKING; FOR EXAMPLE, THE IPS CELL BANK, THE GENOMICS INITIATIVE, THE ALPHA CLINICS, ETC.?

DR. FEIGAL: THERE ACTUALLY IS NOTHING IN THE REPORT. THEY WERE GIVEN UPDATES ON THESE MAJOR INITIATIVES, THE IPS, THE GENOMICS, THE ALPHA CELL CLINIC. THEY ACTUALLY DIDN'T PROVIDE ANY FEEDBACK ON THOSE, CERTAINLY NOT IN THEIR REPORT. IT COULD BE THEY THINK, SINCE THESE ARE ALREADY GOING DOWN THE TRACK, THERE'S NOT AS MUCH AN ABILITY TO IMPACT ON THEM. BUT AT ANY RATE, THERE'S NOTHING SUBSTANTIVE THAT I CAN CALL OUT THAT WOULD SHED LIGHT ON THOSE.

DR. DULIEGE: SO, ELLEN, THANK YOU VERY MUCH FOR THIS DETAILED REPORT, REALIZING THAT YOU HAVE RECEIVED IT FAIRLY RECENTLY. AND THAT WAS A

PERFECT ANSWER TO MY EARLIER QUESTION. BUT MY POINT IS THAT THESE COMMENTS IN GENERAL APPEAR TO BE VERY MUCH IN CONGRUENCE WITH THE POSITION OF CIRM. IF ANYTHING, THE RESPONSE WAS WE AGREE TO EACH OTHER.

WAS THERE ANYTHING IN THEIR RECOMMENDATION THAT WAS REALLY NOVEL, IF NOT PROVOCATIVE, THAT WOULD INSPIRE CIRM TO MOVE IN A DIRECTION THAT HADN'T BEEN THOUGHT ABOUT BEFORE?

DR. FEIGAL: NOT THAT I HEARD AND NOT THAT I READ IN THE REPORT. THERE WAS ACTUALLY A QUESTION THAT WE TOOK OUT BECAUSE THERE WASN'T A RESPONSE. WE ACTUALLY ASKED THEM ARE WE MISSING SOMETHING. IS THERE AN AREA THAT WE SHOULD BE INVOLVED IN? IT COULD BE THAT THIS IS GOING TO BE A CONTINUING DIALOGUE WITH THE SAB, AND THERE'S ONLY SO MANY HOURS IN THE DAY, AND MAYBE THEY DIDN'T REALLY HAVE ENOUGH TIME TO REALLY DWELL ON THAT PARTICULAR THING. IT COULD BE THAT THEY NEED MORE INFORMATION TO REALLY PROVIDE A PERSPECTIVE THERE.

I THINK FROM WHAT WE HEARD, AND I'M JUST SAYING THIS AS A PERSONAL OPINION RIGHT NOW, I'M NOT SPEAKING ON BEHALF OF THE WHOLE AGENCY, IS WHAT I HEARD SEEMED TO BE CONSISTENT WITH OUR STRATEGIC PLAN. I DID NOT HEAR ANYTHING THAT WAS YOU'RE GOING IN THE WRONG DIRECTION. YOU REALLY NEED TO STEER

OVER HERE. IT SEEMED TO BE MORE ABOUT WE ALL RECOGNIZE WE NEED TO FOCUS, AND THEY WERE -- I GUESS THE MOST NOVEL THING WAS THE VERY FIRST RECOMMENDATION IS I GUESS I WOULD SEE IT NOT AS SHOVING, BUT AS REMOVING IMPEDIMENTS TO MOVING QUICKLY ON PARTICULARLY PROMISING PROJECTS.

CHAIRMAN THOMAS: THE CHALLENGE, OF COURSE, IS GOING TO BE THEY'RE RECOMMENDING OBVIOUSLY ADDITIONAL FUNDING FOR US TO DETERMINE, AND BASICALLY THE ONLY THING I HEAR THEY SUGGESTED TO DISCONTINUE IS SHARED LABS, WHICH IS $7 MILLION A YEAR, WHICH IS NOT ONE OF OUR BIGGER TICKET PROGRAMS.

DR. FEIGAL: I DIDN'T ACTUALLY HEAR THEM SAY YOU NEED ADDITIONAL DOLLARS BECAUSE THEY DON'T KNOW OUR BUDGET AND WHAT THE COST OF FULLY FUNDING 68 PROJECTS COULD BE. IT COULD BE REPRIORITIZING.

CHAIRMAN THOMAS: MY ONLY POINT WAS THAT IF WE ARE GOING TO PUT MORE MONEY INTO THOSE PROJECTS AND THEY'RE ONLY RECOMMENDING DISCONTINUING A RELATIVELY SMALL TICKET IN OUR WORLD PROGRAM, WE ARE GOING TO HAVE TO FIGURE OUT WHERE THOSE DOLLARS ARE GOING TO COME FROM, AND SOME OTHER PROGRAMS THAT WE HAVE THAT ARE EXISTING WILL BY DEFINITION HAVE TO BE DOWNSIZED SOMEWHAT. SO THAT WILL BE A CHALLENGE.

DR. FEIGAL: I THINK THE BIG THING IS, I GUESS THE OTHER WAY TO THINK ABOUT IT IS THAT WE DO HAVE CERTAIN AMOUNTS OF MONEY THAT WE PLANNED IN THE BINS. WE ALSO HAVE A BUCKET THAT WE CALL UNALLOCATED. SO IT'S POSSIBLE THAT WE COULD LOOK AT THOSE DIFFERENT BUCKETS TO SEE WHAT WE COULD ACCOMMODATE.

YOU'RE ABSOLUTELY RIGHT THOUGH. WE CAN'T DO EVERYTHING SORT OF BUSINESS AS USUAL.

MR. SHEEHY: BUT IT DOES CALL INTO QUESTION WHAT OUR FUTURE RFA SCHEDULE LOOKS LIKE. I MEAN ONE WOULD ASK MIGHT THIS BE OUR LAST DISEASE TEAM ROUND AT LEAST FOR PROJECTS THAT WE HAVEN'T KIND OF GIVEN BIRTH TO AND BROUGHT ALONG. FOR A NEW DISEASE TEAM THAT HAS NO PRIOR RELATIONSHIP WITH CIRM, WOULD THAT NECESSARILY BE A GREAT INVESTMENT FOR US?

AND JUST ONE OTHER POINT. I THINK ON THIS LAST ISSUE THAT WAS JUST BROUGHT UP, I WANT TO JUST SAY TO JON THOMAS THAT I THINK A REAL MAJOR ACHIEVEMENT OF HIS LEADERSHIP HAS BEEN TO ADDRESS THIS ISSUE. AND I THINK THE START THAT HE'S TAKING, THAT'S NOT TO SAY THAT GREAT WORK WAS NOT BEING DONE BEFORE, BUT I THINK IT'S BEEN TRANSFORMATIVE. AND THEY'RE A LITTLE BIT BEHIND THE CURVE ON THIS ONE.

IT WOULD BE GREAT IF WE DIDN'T SPEND VERY MUCH TIME ON THIS AT THE DECEMBER MEETING.

CHAIRMAN THOMAS: THANK YOU, JEFF. OTHER COMMENTS BY MEMBERS OF THE BOARD? THIS REQUIRES NO ACTION, CORRECT? IT'S LISTED AS AN ACTION ITEM.

MS. BONNEVILLE: JUST IN CASE.

CHAIRMAN THOMAS: JUST IN CASE. YOU NEVER KNOW. HEARING NO ACTION IN PARTICULAR, WOULD THE PUBLIC LIKE TO MAKE ANY COMMENT ON WHAT THEY HAVE BEEN HEARING?

MR. REED: I THINK THERE'S A LOT OF GOOD STUFF THERE. I LIKE THE IDEA OF TAKING FIVE OR SIX OR THREE OR FOUR, EIGHT OR WHATEVER, SMALL NUMBER, AND PUBLICIZING THE HELL OUT OF IT.

ONE THING I THINK WE HAVE HAD TREMENDOUS -- THERE'S NEVER BEEN ENOUGH PEOPLE, ENOUGH STAFF, TO DO THE PUBLICITY WORK THAT'S REALLY REQUIRED FOR THIS INCREDIBLE AGENCY. THERE'S NOTHING ELSE LIKE IT. AND THEY JUST DON'T HAVE ENOUGH PEOPLE. DON GIBBONS HAS ALWAYS DONE TERRIFIC WORK, KEVIN, AMY ADAMS, BUT THERE'S ONLY A VERY TINY NUMBER OF THEM. IF THERE'S ANY POSSIBLE WAY THAT WE CAN GET ANOTHER STAFF MEMBER, I THINK THAT COULD BE TRANSFORMATIVE. WE'VE GOT TO GET THE PUBLIC TO KNOW WHAT'S HAPPENING. THERE ARE MIRACLES HAPPENING

HERE, BUT THEY'RE HAPPENING IN LOW-KEY AND JUST QUIETLY. AND WE NEED TO HAVE SOME NOISE. SO I WOULD HOPE THAT WE'D CONSIDER HIRING ONE MORE PERSON FOR NOTHING BUT PUBLIC RELATIONS JUST TO GET THE MESSAGE OUT. I THINK THAT WOULD BE HUGE. THANK YOU.

CHAIRMAN THOMAS: THANK YOU. OF COURSE, WE HAVE A GREAT VEHICLE FOR PUBLICIZING ALL THIS GOOD NEWS, MR. JENSEN. ALWAYS LIKE TO INVOKE YOU WHENEVER APPROPRIATE, SIR.

ANY OTHER COMMENTS BY MEMBERS? OH, YES. PLEASE.

DR. BRASWELL: HI. GOOD AFTERNOON. MY NAME IS JENNIFER BRASWELL, AND I'M THE EXECUTIVE DIRECTOR OF THE UC SAN DIEGO STEM CELL PROGRAM. I'D LIKE TO REPORT ON THE SUCCESSES OF THE CIRM STEM CELL RESEARCH AND TRAINING PROGRAMS AND SAY THANK YOU TO THE CALIFORNIA INSTITUTE FOR REGENERATIVE MEDICINE FOR THEIR SUPPORT OF THESE PROGRAMS. AND I STRONGLY URGE YOUR CONTINUED SUPPORT.

I'M SORRY THAT I HAVE TO READ MY COMMENTS, BUT THE ROOM IS LARGE AND FILLED WITH PEOPLE WHOSE OPINION I REALLY CARE ABOUT. SO IN ORDER TO STAY ON TRACK, I'M GOING TO READ MY COMMENTS.

TO DATE THE UNIVERSITY OF CALIFORNIA SAN

DIEGO CIRM STEM CELL RESEARCH AND TRAINING GRANT HAS PROVIDED FELLOWSHIPS TO 68 UCSD FELLOWS IN 42 DIFFERENT LABS, IN 14 DIFFERENT DEPARTMENTS, INCLUDING ENGINEERING, MEDICINE, AND BIOLOGY. GRADUATE STUDENTS, POSTDOCTORAL SCHOLARS, AND PHYSICIANS ALL HAVE RECEIVED RESEARCH SUPPORT, ETHICS TRAINING, AND EDUCATION IN STEM CELL SCIENCE AND REGENERATIVE MEDICINE, CREATING AT UCSD AND THROUGHOUT THE WORLD AN INNOVATIVE, RIGOROUSLY TRAINED COMMUNITY OF SCHOLARS, DOCTORS, AND INNOVATORS.

FROM PEDIATRICIANS TO NEUROSCIENTISTS, BIOENGINEERS TO BIOINFORMATICS SPECIALISTS, THE CALIFORNIANS TRAINED IN THE CIRM PROGRAM HAVE MADE SIGNIFICANT CONTRIBUTIONS TO OUR KNOWLEDGE AND TO OUR HEALTH.

ONE STUDENT, FOR EXAMPLE, WAS JESSICA DEQUACH, WHOSE WORK AIMED TO DEVELOP MATERIALS TO TREAT CRITICAL LIMB ISCHEMIA, A SEVERE BLOCKAGE IN THE ARTERIES OF THE LOWER EXTREMITIES WHICH MARKEDLY REDUCES BLOOD FLOW. SHE NOW WORKS AT A PRIVATE COMPANY IN CALIFORNIA.

ANOTHER GRADUATE STUDENT, NISHA PATEL, DID WORK THAT HELPED ATTRACT FUNDING FOR THE NIH BETA CELL BIOLOGY CONSORTIUM, AN INTERDISCIPLINARY

FEDERAL COLLABORATION TO CORRECT THE LOSS OF BETA CELL MASS IN DIABETES.

WITH THE INSIGHTS THESE TWO TRAINEES GAINED, THEIR FACULTY MEMBERS AT UC SAN DIEGO WERE ABLE TO ATTRACT NIH FUNDING TO CALIFORNIA OF OVER $6 MILLION. EIGHTEEN OF OUR TRAINEES ARE PRACTICING PHYSICIANS. THEY BRING ADVANCED KNOWLEDGE OF STEM CELL SCIENCE AND ETHICS TO THEIR CLINICAL PRACTICES.

FOR EXAMPLE, JIGAR PATEL, DO, WHO IS PRACTICING AS A HEART FAILURE PHYSICIAN AT SCRIPPS GREEN; SHAUNA YUAN, M.D., A RESEARCH FACULTY MEMBER AND A NEUROLOGIST AT UC SAN DIEGO; VERONIQUE TACHE-ZONA, M.D., A REPRODUCTIVE MEDICINE DOCTOR AT UC DAVIS; AND LOUISE LAURENT, M.D., PH.D., WHO PRACTICES REPRODUCTIVE MEDICINE AT UC SAN DIEGO, IS ON OUR RESEARCH FACULTY IN THE SANFORD CONSORTIUM FOR REPRODUCTIVE MEDICINE AND HAS DEVELOPED DIAGNOSTIC TECHNIQUES NOW IN CLINICAL TRIAL TO ALLOW EARLY DETECTION OF PLACENTAL PROBLEMS IN PREGNANCY.

SOME OF OUR EARLY CAREER RESEARCHERS HAVE ATTRACTED PRIVATE FUNDING TO SUPPORT THEIR WORK ON DIFFICULT AND MEANINGFUL PROBLEMS, SUCH AS JESSICA YOUNG, PH.D., WHO WORKS TO DISSECT THE ROLE OF INDIVIDUAL GENETIC BACKGROUND IN SPORADIC ALZHEIMER'S DISEASE. OR BEATRIZ FREITAS, PH.D.,

WHOSE WORK WILL CONTINUE WITH PRIVATE FUNDING TO UNDERSTAND THE ROLE OF CERTAIN NEURAL CELLS IN RETT'S SYNDROME AND AUTISTIC SPECTRUM DISORDER.

YOU HAVE HEARD ME MENTION JUST A FEW OF THE TRAINEES ATTRACTED TO STEM CELL RESEARCH AND BIOMEDICINE, THE FIELD THAT WILL TRANSFORM THE WORLD AND HUMAN HEALTH. THE UC SAN DIEGO-CIRM TRAINING PROGRAM HAS ATTRACTED THE FINEST, MOST DEDICATED, AND INNOVATIVE YOUNG SCHOLARS AND PHYSICIANS. MY STORIES ONLY TOUCH ON THE IMPRESSIVE ACHIEVEMENTS OF THE CIRM STEM CELL RESEARCH AND TRAINING PROGRAM FELLOWS.

THANK YOU FOR YOUR TIME AND ATTENTION, AND I URGE YOUR CONTINUED SUPPORT OF THE TRAINING PROGRAM. THANK YOU.

CHAIRMAN THOMAS: THANK YOU VERY MUCH. I THINK WERE OTHERS AT DIFFERENT INSTITUTIONS TO REPORT IN ON THE SAME SUBJECT, YOU'D HEAR EXACTLY SIMILAR SORT OF HIGH PRAISE FOR THAT PROGRAM. SO WE APPRECIATE THE FEEDBACK AND UNDERSTAND AND AGREE WITH THE VALUE IT HAS BROUGHT TO THE MISSION.

ANY OTHER COMMENTS?

DR. FEIGAL: I JUST WANT TO MAKE ONE, AND I SHOULD HAVE PREFACED THE COMMENTS WITH WE ACTUALLY WANT TO THANK SIR JOHN BELL AND THE ENTIRE SAB FOR

TAKING THE TIME, THE EFFORT, AND TAKING TIME OUT FROM EXTREMELY BUSY ACTIVITIES THAT THEY DO. WE GREATLY APPRECIATED THE DISCUSSIONS AND THE THOUGHTFULNESS WITH WHICH THEY CAME UP WITH SOME RECOMMENDATIONS. SO I JUST WANTED TO PUBLICLY MAKE SURE THAT THAT WAS IN THE RECORD AS WELL.

CHAIRMAN THOMAS: THANK YOU. AND THANK YOU VERY MUCH, DR. FEIGAL, FOR THE PRESENTATION, FOR THE QUICK TURNAROUND ON PRELIMINARY RESPONSE FROM MANAGEMENT. WE APPRECIATE THAT.

OKAY. THAT CONCLUDES THE OPEN SESSION FOR THE DAY. WE'RE NOW GOING TO ADJOURN INTO CLOSED SESSION, WHICH WILL BE WHERE, MARIA?

MS. BONNEVILLE: RIGHT ACROSS THE WAY.

CHAIRMAN THOMAS: RIGHT ACROSS THE HALLWAY. MR. HARRISON, COULD YOU GIVE US THE APPROPRIATE LANGUAGE TO SERENADE US INTO CLOSED SESSION?

MR. HARRISON: YES. THE BOARD WILL BE CONVENING IN CLOSED SESSION TO DISCUSS PERSONNEL PURSUANT TO GOVERNMENT CODE SECTION 11126 AND HEALTH AND SAFETY CODE SECTION 125290.30(F)(3)(D).

CHAIRMAN THOMAS: THANK YOU. THERE WILL BE A QUIZ ON THAT NUMBER LATER IN THE MEETING. SO WE WILL ADJOURN FOR CLOSED SESSION ACROSS THE HALL.

THANK YOU.

(AT 2:03 P.M. THE BOARD CONVENED IN CLOSED SESSION, NOT REPORTED NOR HEREIN TRANSCRIBED, AFTER WHICH THE MEETING WAS CONCLUDED.)

160 S. OLD SPRINGS ROAD, SUITE 270, ANAHEIM, CALIFORNIA 92808
1-800-622-6092 1-714-444-4100 EMAIL: DEPO@DEPO1.COM

REPORTER'S CERTIFICATE

I, BETH C. DRAIN, A CERTIFIED SHORTHAND REPORTER IN AND FOR THE STATE OF CALIFORNIA, HEREBY CERTIFY THAT THE FOREGOING TRANSCRIPT OF THE PROCEEDINGS BEFORE THE INDEPENDENT CITIZEN'S OVERSIGHT COMMITTEE OF THE CALIFORNIA INSTITUTE FOR REGENERATIVE MEDICINE IN THE MATTER OF ITS REGULAR MEETING HELD AT THE LOCATION INDICATED BELOW

HILTON SFO BAYFRONT HOTEL
600 AIRPORT BOULEVARD
BURLINGAME, CALIFORNIA
ON
OCTOBER 9, 2013

WAS HELD AS HEREIN APPEARS AND THAT THIS IS THE ORIGINAL TRANSCRIPT THEREOF AND THAT THE STATEMENTS THAT APPEAR IN THIS TRANSCRIPT WERE REPORTED STENOGRAPHICALLY BY ME AND TRANSCRIBED BY ME. I ALSO CERTIFY THAT THIS TRANSCRIPT IS A TRUE AND ACCURATE RECORD OF THE PROCEEDING.

BETH C. DRAIN, CSR 7152
BARRISTERS' REPORTING SERVICE
160 S. OLD SPRINGS ROAD
SUITE 270
ANAHEIM, CALIFORNIA
(714) 444-4100