Project Seed
Phase I

March 11, 2008

PRICEWATERHOUSECOOPERS

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March 11, 2008

Lynn Harwell
California Institute for Regenerative Medicine
210 King Street
San Francisco, CA

Dear Ms. Harwell:

PricewaterhouseCoopers LLP ("PwC" or "we") has performed certain advisory services to assist California Institute for Regenerative Medicine ("CIRM", "Client" or "you") in your evaluation of existing state-funded programs in accordance with our engagement letter dated February 25, 2008 and subject to the terms and conditions contained therein.

Our services were performed in accordance with Standards for Consulting Services established by the American Institute of Certified Public Accountants ("AICPA"). The services did not constitute an audit conducted in accordance with generally accepted auditing standards, an examination of any type, an accounting opinion, or other attestation or review services in accordance with standards established by the AICPA, by the Public Company Accounting Oversight Board or by any other professional governing body. Accordingly, PwC provides no opinion or any other form of assurance with respect to the services or the information upon which our work was based.

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We appreciate the opportunity to assist you with this matter.

Very truly yours,

PricewaterhouseCoopers LLP

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Section 1

Key Deal Issues

Benchmarking was done to find general practices among state-run programs for funding early stage companies

Category	Issue Covered	Comments
Terms	Loan Size	Typical average loan size is in the range of $250K-$500K.
	Interest Rate	Interest rates vary anywhere between prime +1% to 8%.
	Terms	Loan terms vary between two to ten years, but have a five-year term on average.
	Use of Proceeds	Restrictions as to use of proceeds varies across the programs: some programs have no restrictions, while others restrict working capital, salaries for C-level employees or repayment of debt.
	Equity Features	Ten of the twelve programs have built equity-like features into their loans.
	Subordination	While some programs are willing to be subordinated to sophisticated financial investors, most prefer to have first priority or equal status to matching investors.
	Matching Requirements	Most programs do not place restrictions on the source of matching funds, but do require that the matches be committed concurrently to the state investment.
Guarantees	Personal Guarantee Requirements	Ten of the twelve programs do not require personal guarantees; the two programs that require personal guarantees are pure loan programs as opposed to loans programs with equity features.
	Collateral	Some programs take security interest in business assets, although more than half of the programs do not have any collateral requirement.
	Forgiveness Policies	While most programs do not have formal forgiveness polices, they are generally willing to be accommodating.
Fund Management	Loan Servicing	All programs service their loans in house.
	Disbursement of Funds	Most programs disburse funds based on achievement of agreed upon milestones over 1-2 years.
	Level of Success/Failure	Most loan programs are not old enough to have a strong view on average default rates, but anecdotally, the programs have been successful with few write-offs.
	Measures of Success	Most programs use follow-on investment and job creation as measures for success, and track these through informal surveys collected by the program office.
Other Insights	Grants vs. Loans	While companies generally prefer grants, programs interviewed use loans as a way to recoup their investment if the company is successful and enforce corporate discipline.
	Encouraging Follow-on Investment	The dilutive impact of equity-like features can discourage institutional investors. To avoid this, most programs allow loan acceleration and prepayment at a premium. Programs also encourage follow-on institutional investment by building and maintaining relationships with the investor community.
	Royalties vs. Warrants	One program found grants with royalty agreements ineffective, and has moved to a direct loan program with warrants.

Section 2

Methodology

We looked at a range of programs to identify the most relevant benchmarks

Original List: 30

CT	Waterbury Information Technology Zone
CT	CT Development Authority Early Stage Loans
CT	Connecticut Innovations
DE	Emerging Technology Funds
KS	KSTC investments in early-stage innovative technologies companies
KY	Enterprise Fund: R&D Voucher Fund
KY	Enterprise Fund: Gap Fund
KY	Commercialization Fund
LA	Louisiana Fund I
MD	Maryland Venture Fund
MI	MI Emerging Technology Fund
MI	MI Pre-Seed Capital Fund
MI	The Venture Michigan Fund
NC	Strategic Growth Loans
NJ	Edison Innovation Fund
NJ	Stem Cell Grants
NY	Small Business Technology Investment Fund
NY	Innovation Investment Program
NY	Emerging Investment Program
NY	Business Acceleration Program
OH	Biomedical Research and Commercialization Program (BRCP)
OH	Innovation Ohio Loan Fund (IOH)
PA	New PA Venture Capital Program
PA	Ben Franklin Technology Development Authority (BFTDA) Venture Investment Program
PA	Ben Franklin Technology Partners - Early Stage Companies
TX	Emerging Technology Fund
UT	UT Fund of Funds
VA	CIT GAP Funds
WI	Technology Venture Fund Loans
WI	Eau Claire High Tech Loan Program

Selection Criteria

- **State funded**
- **Focused on Life Sciences/ Technology companies**
- **Primarily loans**
- **Meaningful size**
- **Responsiveness**

Programs Considered In Detail: 12

CT	Connecticut Innovations
KY	Enterprise Fund: R&D Voucher Fund
KY	Enterprise Fund: Gap Fund
MD	Maryland Venture Fund
MI	MI Pre-Seed Capital Fund
NC	Strategic Growth Loans
NJ	Edison Innovation Fund
OH	Innovation Ohio Loan Fund
PA	New PA Venture Capital Program
PA	Companies
TX	Emerging Technology Fund
WI	Technology Venture Fund Loans

Section 3
Findings

The four largest state programs, in the aggregate, would provide funds equal to a $500M California program

	CT Innovations	KY Enterprise Fund - R&D Voucher Fund	KY Enterprise Fund - GAP Fund	MD Venture Fund	MI Pre-Seed Capital Fund	NC Strategic Growth Loans	NJ Edison Innovation Fund	OH Innovation Loan Fund	PA - Ben Franklin Technology Partners Early Stage Company Loans (Regional)	PA - New PA Venture Capital Investment Program	TX Emerging Technologies Fund	WI Technology Venture Fund Loans
Size of Fund	$120m	$5m/year		$6m/year	$6.6m	$2m	$15m/year	$50m	$2.5m/year	$60m	$270m	Varies Most recent: $10m for 2 yrs
Year Started	1995	2003	2006	1994	2006	2006	2006	2005	2000	2004	2007	2004
# Investments	92	NA	8	175	22	3	12-14	38	335	14	40	80
Stage of Company?	Seed/ Early Stage	Seed/ Early Stage	Early stage	Seed/ Early stage	Early stage: Commercial-ization	Early stage	Early stage: Applied research Commercial-ization	Early stage: Revenue generating	Early stage: Commercial-ization	NA	Seed/ Early stage	Early stage: Commercial-ization
Grant funding allowed?*	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
VC allowed?	No	No	No	No	No	No	Yes	No	No	Yes, exclusively	No	No

*Most programs will fund companies that have received grant funding in the past (or even as a match). While not all interviewed programs offered both grants and loans, those that did offer both, generally allow individual companies to receive both types of funding. However, follow-on loan or investment funding may trigger repayment of original, smaller grants.

Section 3.1

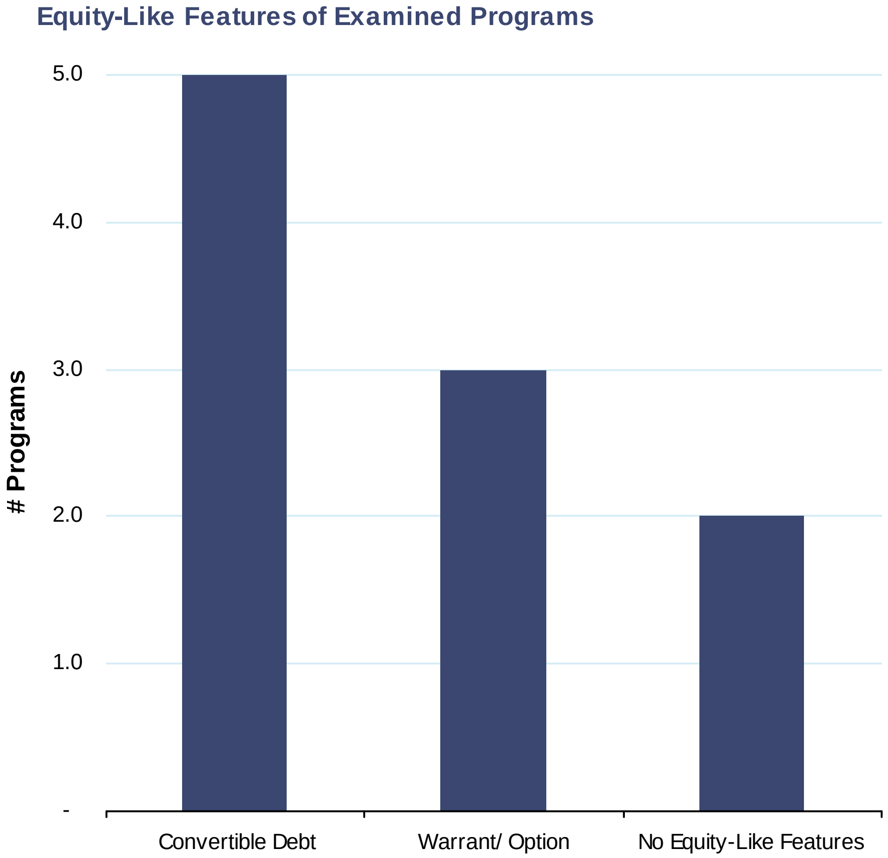
Terms

Range of permitted loans varied according to program funding

	CT Innovations	KY Enterprise Fund - R&D Voucher Fund	KY Enterprise Fund - GAP Fund	MD Venture Fund	MI Pre-Seed Capital Fund	NC Strategic Growth Loans	NJ Edison Innovation Fund	OH Innovation Loan Fund	PA - Ben Franklin Technology Partners Early Stage Company Loans	PA - New PA Venture Capital Investment Program	TX Emerging Technologies Fund	WI Technology Venture Fund Loans
Average Loan	Seed $500k; Early Stage $750k	$200K	$400K	Seed $100k; Early Stage $500k	$220K	$250K	$750K	$800K-$900K	$150K	$2m-$3m	Pre-Seed $250k; Early Stage $1m-$1.5m	$250K
Range of Loans	$500k-$5m	Up to $200K ($100K/year)	Up to $400K	Seed $50k-$150k; Early Stage $150k-$1m	$50K-$250K	$160K - $250K	$200K-$1m	$500K-$1.5m		$1m-$5m	Pre-Seed $150-$250K; Early Stage $500k-$3m	$25K-$500K
Interest Rate	8-10%	Payback required at 1.2X principle		Varies	8%	Prime + 1%	4%-10%	Prime + 2%	6%	8%	8%	4%
Term (years)	18 months	2	2	10	2-3	5	Up to 5	5-7	8	Life of fund (~7 yrs)	10	5-10
Matching Requirement	None	1:1	3:2	Yes; rate not specified	1:1	1:1	1:1	3:1	>1:1	3:1	1:1	1:3
Use of Proceeds	Any	Tech-based product development; 51% must be spent with a KY university	Executive Talent; Operating Capital	Any	Any	No C-level salaries; No facilities	Growth Capital	Fixed assets; Software develop-ment costs	Working capital	Working capital	No repayment of debt; No deferred salaries	Working capital; Equipment

Most programs have built equity-like features into their loans

Loan structures fit into three categories: convertible debt, loans with options, and loans with no equity-like features



Note: This analysis excludes New PA Venture Capital Fund and Maryland Venture Fund, as both programs are in essence pure equity programs. New PA Venture Capital Fund provides funds to VCs, not directly to early stage companies. Although the state program is legally precluded from making a direct equity investment, the loan mechanism is very soft: the loan is made to the GP who then purchases LP-equivalent stake. The program receives the same returns as other LPs, and the loan is not secured.

Convertible Debt Structures:

- Note convertible to Series A preferred stock at the next round of equity financing
- Convertible debt requiring full payback at 1.2X the principle in 30 months from the date of contract, with a conversion discount of 55%-60% against the valuation in the case of a qualified round of financing
- Ten year loan with right to purchase equity, with a conversion discount of 20% against the valuation of a qualified round of financing

Warrants/ Options Structures:

- Require 25% of the loan amount in 10-year warrant coverage, with pricing based on company's valuation (conducted by company)
- Require 10-year warrant with pricing based on program's (or institutional investor providing matching funds') valuation of the company at the time of entry

No equity-like features:

- Some state programs are legally precluded from taking equity
  - *"We are precluded from taking equity. We want to, but the legislature won't allow it."*

    Representative, Program 8
  - *"Our constitution prohibits equity."*

    Representative, Program 5

While some companies are willing to be subordinated to sophisticated financial investors, most prefer to have first priority or equal status to matching investors

Issue	Commentary
Some programs are willing to be subordinated to sophisticated financial investors	• *"If the company's matching funds come from a VC or an experienced, sophisticated angel investor, we would probably subordinate. If the angel is uncle Ernie who made his money selling hot dogs and now wants to invest in a tech deal, we probably wouldn't. We would also want to make sure that the terms that the VC is offering are acceptable from the company's perspective."* Representative, Program 10 • *"We wouldn't stand in the way of our companies getting funded, and would be subordinated under certain circumstances. In most situations, though, we receive the exact same terms as the matching investor we come in with."* Representative, Program 3
However, most programs prefer to have first priority or equal status to matching investors	• *"If the company gets a line of credit from another source, we usually share our position."* Representative, Program 8 • *"We try to get a first subordination position when we can. We only go for first or shared positions."* Representative, Program 5 • *"We require that we be superior to any lender that comes in after us."* Representative, Program 9

Most programs do not place restrictions on the source of matching funds, but do require that the matches be committed concurrently to the state investment

Issue	Commentary
Most programs did not place restrictions on the source of matching funds	• *"We don't have restrictions on where matching should come from, but most of our companies have used angel matching. We allow founders' own money to be used as long as it's not debt."* Representative, Program 3 • *"We want the founders to have some skin in the game, so we'll make sure that they are invested. Beyond that, we won't restrict where they get their matches from."* Representative, Program 10 • *"Funds can come from any mixture of sources, including collaborative research from private institutions."* Representative, Program 8
Matching funds often have to be committed concurrently with the program funds	• *"The company has to find a match before they come to us. Further, we require that the matching amount be in new cash. We define "new cash" as money that came into the company no earlier than 60 days prior to our investment. We aim to give the company a full tank to help them accelerate starting from the time of our investment. If their match is a few months old, their tank isn't full."* Representative, Program 3 • *"Funding must be within the last 90 days. We want our matching investment to be fresh."* Representative, Program 4 • *"We won't consider a commitment to a prior portion of a project as sufficient matching."* Representative, Program 8

Section 3.2
Guarantees

Most programs do not require personal guarantees

Are personal guarantees required?	CT	KY R&D	KY GAP	MD	MI	NC	NJ	OH	PA Ben	New PA	TX	WI
	No	No	No	No	No	No	No	Yes	No	No	No	Yes

Issue	10/12 respondents do not require personal guarantees; the two programs that require personal guarantees are pure loan programs as opposed to loans programs with equity features
Most interviewees recommended against personal guarantees	• *"I don't like it when state government start acting like banks and require personal guarantees. Why would a company go to the government over a bank then?"* Representative, Program 3 • *"I would strongly recommend against personal guarantees. If you do that, they'll just go to the bank. Instead, we require corporate responsibility."* Representative, Program 1 • *"Inventors don't want to sign personal guarantees. If you ask for that, you scare them away. So we don't ask for personal guarantees."* Representative, Program 9
One program's guarantee requirement depends on the company's ownership structure	• *"We say we require personal guarantees in our guidelines, but we really decide this on a case by case basis. If VC's are involved and own a large stake, we don't require a personal guarantee. If more than 50% of the ownership is by one person, then we may ask for a personal guarantee. Keep in mind that the companies we work with already have their technology validated. They may be 1-2 years away from making profit, so they should be able to pay it back."* Representative, Program 5
One program justifies its personal guarantee requirement with its forgiveness clause	• *"We do ask for personal guarantees to keep companies from giving up. Since our loans are forgivable, the owners don't feel like they are signing their lives away. It does make them take the business more seriously, though."* Representative, Program 8

Some programs take security interest in business assets, although more than half of the programs do not have any collateral requirement

Is collateral required?	CT	KY R&D	KY GAP	MD	MI	NC	NJ	OH	PA Ben	New PA	TX	WI
	Yes*	No*	No*	No	No	No	Yes*	Yes	No	No	Yes	Yes

Issue

7/12 respondents do not require collateral

Some programs ask for security interest in the business assets

- *"We don't have a collateral requirement, but If the company purchases equipment then we take a security interest in it."*

  Representative, Program 9

- *"We require a 1st priority security in assets, until conversion to equity."*

  Representative, Program 7

- *"We get a general business security agreement or take equipment as security interest."*

  Representative, Program 8

Many programs noted that the early stage companies do not have attractive liquid assets to offer as collateral

- *"We don't necessarily ask for a specific collateral. Often, the only asset the company has is their IP. Sometimes there isn't even a patent or a license."*

  Representative, Program 10

- *"We don't have a collateral requirement. We don't want their company assets if they don't make it because we don't want to be involved with disposing of it."*

  Representative, Program 3

* The CT and NJ programs require IP as collateral; KY programs accept IP as informal collateral.

While most programs do not have formal forgiveness polices, they are generally willing to be accommodating

Do you have formal forgiveness policies?	CT	KY R&D	KY GAP	MD	MI	NC	NJ	OH	PA Ben	New PA	TX	WI
	No	No	No	No	No	No		No	No	No	No	Yes

Issue | **10/11 respondents do not have formal forgiveness policies**

Most programs will be flexible with loan terms in order to help companies succeed

- *"There are no formal forgiveness clauses in our contracts, but we might forgive interest payments depending on the reasons for delinquency. If we see that one of our companies doesn't have the cash to make an interest payment, but we know that their prospects continue to be very strong, we'll allow for a deferral."*

  Representative, Program 10

- *"We don't have any forgiveness clauses written down. We have communicated verbally that the companies should come see us if they are facing any issues and require some adjustment on our part. Within reason, we'll try to accommodate them. That gets back to our long term purpose: We aren't a profit organization, we are really there to help the company survive and grow."*

  Representative, Program 3

- *"We will extend a loan as long as the company is around."*

  Representative, Program 9

One program has a formal forgiveness clause

- *"Our loans are forgivable. We turn the loan into a grant if the product is not commercially viable. But we give them the opportunity to sell off their equipment or any technology to pay us back what they can.*

  Representative, Program 8

Note: NJ did not provide a response to this question.

Section 3.3

Fund management

All programs service their loans in house and most disburse funds based on achievement of agreed upon milestones

Issue	Commentary
All interviewed programs serviced their loans in-house	• *"We [service our loans] in house through our contracts and grants group. They handle $1 million in loans and $3 million in grants per year, so they know what they are doing. You really want this done right, so we keep it in house."* Representative, Program 9 • *"We service our own loans. We have never even looked into having a third party do it."* Representative, Program 8
Most programs disburse funds based on achievement of milestones	• *"Disbursements are traunched based upon performance. Upon signing the contract, 70% of 1st year award is disbursed. When sufficient progress has been made upon deliverables and after a confirmation visit from [our] Science and Technology Corp, the other 30% for Year 1 will be disbursed."* Program Term Sheet • *"The company gets 50% upon approval of the loan. Six months later, they have to give us a midterm report, and if things are going right, they get the next 40%. At the end of the first year they do a year end report and we give them the final 10%, less any fees or legal expenses."* Representative, Program 9 • *"For the standard commercialization projects, there are two disbursements: one up front, and one six months into the project contingent upon reaching certain milestones. For the pre-seed, there may be up to 5 disbursements. Even though they may be eligible for up to $1m, we don't give more than $250K at the front end. They can request more money at any time, but to get it they must meet milestones."* Representative, Program 7
While some milestones are revenue-based, other measures may also be used	• *"Some milestones are revenue based, but we try to stay away from that. The pre-seed companies aren't earning any revenue. In the life sciences, milestones may be clinical trials, toxicology reports, recruitment of senior executives with experiences, agreements with universities or product demonstrations"* Representative, Program 7 • *"Disbursements are based on milestones done on case by case basis. It's mostly some level of revenue."* Representative, Program 5

Most loan programs are not old enough to have a strong view on average default rates, but anecdotally, the programs have been successful

Issue	Commentary
Most programs have not been around long enough to give a strong view on default rates	• *"We've only switched to making loans 5 years ago and since our loans have 8 year terms, we don't really know how many will default."* Representative, Program 10 • *"Our investments haven't been around long enough for any loans to arrive at term end."* Representative, Program 6 • *"It's too early to tell. So far (since 2005), we've made 38 investments and had one default."* Representative, Program 5 • *"So far (since 2006), we've had 3 defaults out of the 52 notes we've issued. We credit our due diligence and also the fact that our state lacks an educated investor community."* Representative, Program 1
However, interviewed programs have been generally successful	• *"Generally speaking, about 85% of our companies are still in business 5 years after we've stopped providing funding. This does include the "walking dead" (technically functional companies that are still living off of grants and research money), but it's still pretty good."* Representative, Program 10 • *"Since we started, three angel groups have sprung up in our state. They piggy-back on our due diligence and we encourage that."* Representative, Program 1 • *"While we haven't measured any numbers, anecdotally our program has been very successful. We have seen a number of our projects get follow-on funding and have seen IPO's as well."* Representative, Program 8 • *"We are generating about $2 million per year on the $48 million we've invested. Still, the jury is out in terms of our success. We lost about $300K on the company that defaulted."* Representative, Program 5 • *"The fund has invested over $45 million since 1994 and has had a return of $57 million."* Representative, Program 2

Most programs use follow-on investment and job creation as measures for success, tracked through periodic self-reported surveys

Issue	Commentary
Most programs measure success by tracking quality job creation and follow-on investment	• *"The key performance indicators that we look at are new job creation and follow-on investment."* Representative, Program 4 • *"We look at the number of jobs created over time as well as wage levels. We also look at federal money that follows our investment. We also look at the collaborative research money that comes from the private sector (e.g. GE) that comes into the project."* Representative, Program 8
Most programs track the benefits through periodic self-reported surveys	• *"We send annual impact surveys to the companies we funded. In these surveys, we track the number of jobs they've created within the year, sales, outside capital invested, number of newly developed products and processes. We also track payroll."* Representative, Program 10 • *"We collect several data points from the company twice a year. We monitor the jobs retained at the time of the investment, jobs created following the investment, and track the median wages of the company."* Representative, Program 6 • *"We collect information on an annual data. I send out a survey asking for the number of FTEs they had at year end, the number they hired during the year, the number expected to be hired next year. As for wages, we don't explicitly monitor them but do assume that these technology companies will bring in high paying jobs."* Representative, Program 3
One program was reviewed by an external consultant	• *"In 2005, there was an outside study done on the benefits of our program. The state government allowed them access at the W2 level, so they really got to the bottom of it. They found that just the payroll tax has returned something like $412 million from our investments!"* Representative, Program 10

Section 4
Other insights

While companies generally prefer grants, programs interviewed use loans as a way to recoup their investment if the company is successful and to enforce corporate discipline

Issue	Commentary
Investors prefer grants without royalties or equity-like features…	• *"Everyone wants free money."* Representative, Program 5 • *"Investors would definitely prefer a grant."* Representative, Program 10
…but programs use loans as a way to recoup their investment and to enforce corporate discipline	• *"This is for creating commercialization value. If we are providing the initial funding and the company is successful, why can't that company pay us back? At the end of the day, they don't get hurt if it doesn't work out. We don't take collateral, we don't have guarantees. Our funding is much better than a traditional loan because they don't have to start making payments. They have no financial obligation to pay us on a regular basis, so it doesn't affect their ongoing cash flow. The interest is accumulating and gets converted with the rest of the loan at exit. But, even then they don't have to pay us anything in cash. Besides, when they come to us, they've already taken a third party match, allowing themselves to be diluted. So, there's no reason that we shouldn't benefit if the company is successful because of what we provided."* Representative, Program 3 • *"We give them loans because it starts to make it into a real business."* Representative, Program 10 • *"With the loan program, our center has become much better at providing guidance, at getting more involved. Loans force companies to be more disciplined."* Representative, Program 9

The dilutive impact of equity-like features can discourage institutional investors. To avoid this, most programs allow loan acceleration and prepayment

Issue	Commentary
Most programs accept loan prepayment in lieu of exercising their equity options…	• *"We make sure that our funding mechanism doesn't get in the way of the VC funds. If there's a fundraising round and a VC wants the company to pay off our loan early, we'll negotiate and do it. While we won't give up our warrants years before anyone else would, if the debt needs to be restructured or if they would like us to convert in this round, we'll do it. The VCs know that we don't really act like private investors."* Representative, Program 10 • *"The most important thing we do is not in writing. We just make sure that the entrepreneurs know that at any time they need help with anything we've signed, they just need to ask. E.g.. If we have a convertible note that requires the company to convert us into a Series A preferred stock when they raise capital and the VC doesn't want to get diluted, we will allow that with a 5% kicker penalty. We don't want to stand in the way of the company getting $5 million or $10 million in VC funds."* Representative, Program 3 • *"If there's an institutional round of investment, it's not uncommon that the company would want to get rid of us because of the diluting effect. The investors would make an offer, and if it's good enough from our rate of return perspective, we might accept it. We don't have a specific rate built into our agreements."* Representative, Program 1
…while others avoid equity-like features altogether	• *"The VC guys love us because we don't take an equity stake and don't dilute the organization"* Representative, Program 5

Building and maintaining relationships with the investor community fosters a positive environment for follow-on investment

Issue	Commentary
Involving institutional investors as matching funds creates a long-term interest in the company	• *"We require the company to have a VC or an angel network partner from the beginning. This means that once they get through this stage, they already have the right exposure. The VC or angels have already invested in them and will want to go further to help them succeed."* Representative, Program 9
Building and maintaining relationships with the investor community helps to provide warm introductions to companies that are ready	• *"We've developed a Solutions Network to make sure that we can provide our companies with a warm introduction to a VC when they are finally ready. This network consists of 3 people whose sole job is to meet and maintain information about resources that can help our companies. One of these Solutions Network resources is dedicated to building the VC network, staying active in that community and keeping companies in front of the right VCs."* Representative, Program 10 • *"We try to get the companies to engage VC and Angels early on in order to broaden their exposure. Part of their milestone requirements is to get exposure to VCs and Angels. We provide resources to help the companies prepare their plans and make presentations to other investors. This is done through our Entrepreneurs Network."* Representative, Program 8
Some states have gone so far as to start funding new VC funds to create a support network for their early stage companies	• *"Our fund was created with the specific goal of growing state-based VCs that would invest in pre-revenue [state] companies. VCs in general have started moving upstream, which leaves a gap between [our] loans and institutional VC. We are looking to close that gap by investing in first time funds. The VC managers themselves may be very experienced, but we are looking for first time teams that haven't managed a fund together before. Generally, such funds have a hard time raising money. We fund them at this stage to develop the relationship. Also, we want funds outside the state to open offices here."* Representative, Program 10

One program found grants with royalty agreements ineffective, and has moved to a direct loan program with warrants

Issue	Commentary
Royalties may be difficult to collect as agreements are based on only vague definitions of final product	• *"Our organization has evolved from when it first started. The original rationale for our existence was to work closely with universities to spin out promising technologies. So, we awarded grants to universities with built-in royalty agreements. What we found was that the universities tended to use the money for pure research, they weren't really commercializing or doing applied research. That led us to work more with entrepreneurs. We found that royalties weren't very effective there, either: it was difficult to define exactly which products the royalty would be based on. They would say, 'Well, our successful product is not exactly what you gave us money for.' It's not to say that our royalty agreements couldn't have been structured better, but we found them insufficient and switched to an investment model. Now, we don't have any royalties left."* Representative, Program 10 • *"Royalties do take some time to start paying back. I wouldn't build a program that assumes a lot of positive flow in year 3, 4, or 5 of the company. This requires a sustained investment by the state."* Representative, Program 10
One program currently offers their assistance in the form of loans with warrants	• *"After we moved away from grants, we started offering direct loans and the warrants came as a natural sequence to that. While we are not a for-profit, we would like to see some of the returns if the company does well."* Representative, Program 10

Appendix 1
International Programs

We considered a range of international programs

Original List: 14	
Canada	MaRS Discovery Centre
Canada	Centre for Drug Research and Development
Canada	Premier's Summit Award
France	Genopole Day 1
France	Genopole Stem Cell Research Project
Sweden	Industriefonden Development Capital for Growth Companies
Sweden	Innovationsbron Seed Capital - Loans (Villkorslån)
Sweden	Innovationsbron Seed Capital - Equity Investments (Ägarkapital)
Sweden	Innovationsbron Seed Capital -Teknoseed
Sweden	Technopol AB
Sweden	NUTEK Funds
Sweden	ALMI Funds
Sweden	Swedish Research Council Program
UK	Cambridge Enterprise

Selection Criteria

- **Public funds**
- **Focused on Life Sciences/ Technology companies**
- **Meaningful size**
- **Availability of information**

Programs Considered In Detail: 4	
France	Genopole Day 1
Sweden	Innovationsbron Seed Capital - Loans
Sweden	Innovationsbron Seed Capital - Equity
Sweden	Teknoseed AB
UK	Cambridge Enterprise

While France has a venture capital program for early stage healthcare and biotech companies, Sweden has a number of programs that focus on commercialization

Program	Detail
France: Genopole Day 1	• Euro 2.1m (~$3.2m) venture capital program started in 1999 • 25 completed investments worth Euro 1.3m (~$2m) • All investments appear to be structured as equity • Focused on Healthcare and Biotechnology • Funding comes from both private and public sources, but primarily from ANVAR, the French innovation agency • Website: www.genopole.org/html/fr/entreprendre/premierjour.htm
Sweden: Innovationsbron	• **Innovationsbron Seed Capital: Loans** – Kronor 400K (~$65K) loans to early stage companies with high economic potential – Loans are partially or wholly forgivable in the case of failure – Funded projects must be connected to university research – Website: www.innovationsbron.se/Bazment/70.aspx • **Innovationsbron Seed Capital: Early Stage Equity Investments** – Early investments of kronor 500K (~$82K) in exchange for an equity stake – Website: www.innovationsbron.se/Bazment/645.aspx
Sweden: Teknoseed AB	• Investments of up to kronor 7.5m (~$122K) for 3-7 years • 28 active investments worth kronor 85m (~$13.9m) • Investments appear to be structured as equity • Although the fund was established by a government institution, might be a for-profit organization • Website: www.teknoseed.se/default.asp?pId=2

Note: PwC reviewed websites in English and French, using rudimentary translation tools for Swedish-language websites

Cambridge Enterprise Seed Funds provide pre-seed and seed funding for Cambridge University academics

Program	Detail
UK: Cambridge Enterprise Seed Funds	• Targeted at members of University of Cambridge and the Babraham Institute • Aim to encourage co-investment, follow-on funding and commercialization of academic inventions • Funding of various levels is available for various purposes: – *PathFinder funding* of up to £ 10K (~$20K) is available to carry out market and IP assessments, plan marketing strategies, etc. – *Concept funding* of up to £60k (~$120K) can be used for applied development, to prove a concept, assess the market, etc. This could lead to a license for University intellectual property – *Seed funding* of up to £250k to set up a new company (done in concept), joint venture or partnership • Cambridge Enterprise Seed Funds maintain links to Venture Capitalists, to offer a route and assistance to entrepreneurs ready for future investment rounds • Website: www.enterprise.cam.ac.uk/seedfund.php

Note: PwC reviewed websites in English and French, using rudimentary translation tools for Swedish-language websites

Appendix 2
Interviews

We conducted 20 interviews with programs in 12 states

State	Program	Title
CT	CT Development Authority	Program Administrator
CT	CT Development Authority	CT Innovations Program Director
DE	DE Emerging Technology Funds	Emerging Technology Specialist
KY	KY Enterprise Fund	VP, Commercialization and Venture Finance
LA	LA Venture Fund I	Managing General Partner
MD	MD Venture Fund	Venture Fund Managing Director
MD	MD Venture Fund	Managing Director of Finance
MI	MI Pre-Seed Capital Fund	Executive Director
NC	NC Strategic Growth Loans	VP of Business and Technology Development
NJ	NJ Economic Development Authority	Public Affairs Director
NJ	NJ Stem Cell Grants	Program Assistant
OH	Innovation Ohio Loan Fund	Program Manager
OH	Innovation Ohio Loan Fund	Credit Analyst
PA	Ben Franklin Technology Partners - Statewide	Director of Statewide Affairs
PA	Ben Franklin Technology Partners - Early Stage Companies	Manager of Entrepreneurial Programs, NE PA Region
PA	New PA Venture Capital Program	Director of Venture Investment
PA	New PA Venture Capital Program	Assistant to Program Director
TX	TX Emerging Technology Fund	Investment Manager
TX	TX Emerging Technology Fund	State-wide Contact
WI	WI Technology Venture Fund Loans	Program Coordinator