CSUPERB Overview & Proposal Writing Workshop

Susan Baxter, Executive Director, CSUPERB
James Schmitt, Program Administrator, CSUPERB

www.calstate.edu/csuperb
www.csuperb.org/blog

28th Annual CSU Biotechnology Symposium
January 8, 2016
**Possible Topics (pick & choose order!)**

- Introduction to CSUPERB: Program Mission, Current Issues and Initiatives (20 - 30 min)
- Grant & Award Programs – facts & figures (20 min)
- Overview of the CSUPERB review process (15 min)
- How to Read a Request for Proposals (RFP) – (30 min)
  - Entrepreneurial Joint Venture
  - Faculty-Student Research: New Investigator
  - Faculty-Student Research: Research Development
  - Curriculum Development

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**CSUPERB Schedule 2015-2016**

<table>
<thead>
<tr>
<th>Program</th>
<th>RFP Issued</th>
<th>Application Deadline</th>
<th>Award Notification</th>
<th>Maximum Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial Joint Venture Matching Grant Program (JV)</td>
<td>OPEN</td>
<td>Feb. 1, 2016</td>
<td>May</td>
<td>$25,000</td>
</tr>
<tr>
<td>Curriculum Development Program (PR)</td>
<td>OPEN</td>
<td>Feb. 1, 2016</td>
<td>May</td>
<td>$15,000</td>
</tr>
<tr>
<td>Faculty-Student Collaborative Research Grant Programs (New Investigator &amp; Research Development)</td>
<td>OPEN</td>
<td>Feb. 1, 2016</td>
<td>May</td>
<td>$15,000</td>
</tr>
<tr>
<td>Travel Grant (Faculty and Student) Programs</td>
<td>OPEN</td>
<td>March 14, 2016 (6 October 2016)</td>
<td>May</td>
<td>$1500</td>
</tr>
<tr>
<td>Howell-CSUPERB Research Scholar Awards Program (for students)</td>
<td>CLOSED</td>
<td>Early October</td>
<td>December</td>
<td>$3500 to student only</td>
</tr>
<tr>
<td>Presidents' Commission Scholars (for students)</td>
<td>OPEN</td>
<td>Feb. 10, 2016</td>
<td>April</td>
<td>$8000 ($6000 to student; $2000 to lab)</td>
</tr>
<tr>
<td>Symposium Awards - faculty &amp; students (Andreoli, Eden, Faculty Research, Nagel &amp; Pauling Awards)</td>
<td>CLOSED</td>
<td>Early October</td>
<td>At Symposium</td>
<td>$1000-1750 / award</td>
</tr>
<tr>
<td>28th Annual CSU Biotechnology Symposium, Santa Clara Marriott, CA</td>
<td></td>
<td>Poster Abstracts Were Due Sept. 28, Registration open until Dec. 1st</td>
<td>Early November</td>
<td>$350-475 (in addition to $150 travel reimbursement)</td>
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<tr>
<td>CSU i-Corps™ Faculty-led Teams Cohort</td>
<td>OPEN CALL</td>
<td>Feb. 1, 2016</td>
<td>March</td>
<td>$2500</td>
</tr>
<tr>
<td>CSU i-Corps™ Student-led Teams Cohort</td>
<td>OPEN CALL</td>
<td>April 11, 2015</td>
<td>May</td>
<td>$2500</td>
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Find the CSUPERB grants database at:
http://csuperb.org/grants/database/

Keep in mind that awards reflect applications received in answer to specific Requests for Proposals (RFPs). Each year the CSUPERB Faculty Consensus Group and Strategic Planning Council review and tweak RFPs to align with strategic intent. Past review criteria will not be the same as found in the current RFP!

**ALWAYS read the current RFP before writing a CSUPERB proposal!**
Tip #1 for Applicants
Questions? Contact CSUPERB Program Office!

619-594-2822

We do not sit/vote on the peer review committees. We don’t have a conflict of interest. We can give advice before & after proposal is submitted.

SECTION ONE:

Introduction to CSUPERB

• What is the Program Mission?

• Current Initiatives and Strategic Focus
CSUPERB Mission:

“...is to develop a professional biotechnology workforce by mobilizing and supporting collaborative California State University (CSU) student and faculty research, innovating educational practices, and responding to and anticipating the needs of the life science industry.”

- Faculty-led program formed in ~1985
- California legislature recognized and funded program in 1999 (AB 968, Ducheny) to “maintain and enhance its role in the preparation of the biotechnology workforce”
- 2015-1018 Strategic plan approved by Chancellor White available on website

The life science companies, academic centers and research institutions that make up the biotechnology, or life sciences, industry in California employed over 267,000 professionals in 2013.

- PriceWaterhouse Coopers, BayBio, and California Healthcare Institute report

An October 2013 survey of science deans suggests that 5-7% (1138) of the CSU’s employees are involved in biotechnology education and research.
The CSUPERB “T-shirt” slogan: 
Research is Education and the #1 Workforce Need

We believe that research experiences & experiential learning lead to a greater number of successful biotechnology students (persistence toward degree, improved GPA, improved graduation rates).

We hear that research experiences result in better prepared graduates for the workforce and graduate school. We know that >85% of CSUPERB-supported students continue in degree-relevant jobs or graduate school after degree completion.

We do not think research experiences should be reserved for upper level, academically proven students. Students gain “self-efficacy” by practicing as scientists, engineers and entrepreneurs earlier in their academic careers. Students who benefit the most are often those with lower GPAs.

Strategic Plan

- Biotechnology – Defined Broadly and Multi-Disciplinary
- Student-focused
- Participatory Learning (Experiential, Immersion, Project-Based, Community-Partnered, Team-Based)
- Integration of Education & Research
- System-wide focus
- Industry-responsive (aware)
CSUPERB featured in 2015 Vision & Change Report
(issued by AAAS, NSF, HHMI, NIH, USDA)


CSUPERB Program Review

Are PI’s winning follow-on funding? Are students benefitting?

• The fiscal return-on-investment of the major grant programs averaged >1:14 (or 1447%), based on CSUPERB dollars awarded (2004-2013) and compared to follow-on funding received by CSUPERB-supported faculty.

• The graduation rates of CSUPERB-supported student researchers is >90%, far exceeding the averaged CSU STEM six-year graduation rates (28% for freshman entering in 2002).

• >90% of CSUPERB-supported students continue on in life science career paths, whether accepting jobs in the life science industry or entering professional and graduate school programs.
Despite seed award size and overall budget, CSUPERB grants are transformational and impactful. Review committees have proven adept at recognizing good ideas that are nationally competitive biotechnology projects.

Several large program grants awarded across CSU (CIRM Bridges, NIH, ARRA, etc.) Includes $17M NIH grant to a JV awardee

Fiscal return-on-investment is not, of course, the whole CSUPERB story
CSUPERB-Supported Student Researchers: Outcomes

- Students directly supported ($) on research grants = 266 students
- At least 91% of CSUPERB-funded undergraduates (2006-2012) continued in life sciences degree programs or graduated. Graduation rates correlate with what is known in high-impact practice literature, but also reflects faculty recruitment of accomplished (not at-risk) students in general.

CSUPERB directly supports 600+ individuals across the CSU

Individual support includes grant award and monetary support for symposium attendees.
CSUPERB is continually ‘renewing’ applicant pool and increasing supported biotech researchers system-wide

Percentage of first-time faculty applicants averages 36% (2006-2012); win rates similar

But our grant applicant and award pools are not as “disciplinary-diverse” as we’d like them to be!
## 2015 – 2018 Strategic Objectives

<table>
<thead>
<tr>
<th>Expand Experiential Learning Opportunities across CSU</th>
<th>Innovate Biotech Education</th>
<th>Partner with the life sciences industry</th>
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<tbody>
<tr>
<td>(continue support of student-faculty research &amp; entrepreneurship opportunities)</td>
<td>(embed experiential learning throughout curriculum + support multi-disciplinary &amp; soft skills educational needs)</td>
<td>(grow entrepreneurship/commercialization networks + build a sustainable, involved alumni network)</td>
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- **Expand Experiential Learning Opportunities across CSU**
  - Continue CSUPERB competitive grant programs & report out impact and outcomes data from supported PIs and students
  - Continue & grow reach of CSU I-Corps microgrants program
  - Host industry networking opportunities for faculty as part of I-Corps/Symposium activities
  - Advocate for CIRM Bridges continuation

- **Innovate Biotech Education**
  - Continue offering and updating CSU I-Corps webinars & curriculum
  - Pilot new Curriculum Development RFP (multi-disciplinary & experiential)
  - Organize and host workshop to address effective STEM education and mentoring
  - Pilot programs to embed and scale soft skills development for students in biotech education

- **Partner with the life sciences industry**
  - Strengthen industry & alumni involvement in CSU I-Corps & Annual CSU Biotech Symposium
  - Work with I-Corps partners & FDA to offer biological sciences commercialization workshops
  - Pilot a more defined & sustainable alumni network & database
  - Broaden outreach & communications, targeting not only existing CSUPERB community, but also external stakeholders & legislators

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### SECTION TWO:

- **Facts & Figures from Grant & Award Programs**
Distribution of CSUPERB Grants & Awards Budget
$790,311 awarded to 21 CSU campuses in AY14-15

All CSUPERB programs are competitive and reviewed by CSU faculty.

The CSUPERB Strategic Plan puts an emphasis on support for faculty-student research within the CSU in order to create new opportunities for professional development for both groups. The Seed, Travel, Howell and Eden/Nagel programs support collaborative faculty-student research teams.

2014-2015 Grants & Awards Program Summary

<table>
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<tr>
<th>Participation</th>
<th>Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Proposals, Applications and Nominations Received</td>
<td>Faculty-Student Research Seed Grants</td>
</tr>
<tr>
<td>(Including all competitive grants and awards programs) / # Campuses Applying</td>
<td>31 / $463,578</td>
</tr>
<tr>
<td>Success # Awards / $Total</td>
<td>Entrepreneurial Joint Venture Grants</td>
</tr>
<tr>
<td>Faculty-Student Research Seed Grants</td>
<td>3 / $75,000</td>
</tr>
<tr>
<td>Programmatic Grants</td>
<td>1 / $15,000</td>
</tr>
<tr>
<td>Travel Grants (Faculty and Student)</td>
<td>40 / $54,733</td>
</tr>
<tr>
<td>Howell-CSUPERB Research Scholar &amp; Presidents' Commission Scholar Awards</td>
<td>23 / $130,000</td>
</tr>
<tr>
<td>Symposium Awards</td>
<td>6 / $9500</td>
</tr>
<tr>
<td>CSU I-Corps™ Microgrants</td>
<td>17 / $42,500</td>
</tr>
<tr>
<td>Total # Campuses Funded / CSUPERB Awards / Grants &amp; Awards Dollars</td>
<td>21 / 121 / $790,311</td>
</tr>
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</table>
Competitive CSUPERB Funding by CSU Campus AY 14-15

This chart summarizes CSUPERB financial support in the form of competitive grants, awards, and symposium expenses (in dollars, $) by campus. 21 campuses won grants and awards this year; 21 campuses were represented at the Annual Biotechnology Symposium.

Retrospective CSUPERB Proposal Success Rates
(Funded Proposals / Total Number of Applications Received)
Success Rates hover around 35%; the FCG recommends success rate consistent across programs.
As we tightened focus on 1st/2nd year students with no previous research experience or support, PresComm application numbers have decreased.

## Success Rates - Major grants only (FS, JV, CD)

\[
\text{Success rate} \% = \frac{\text{awards made}}{\text{applications received}} \times 100
\]

Despite periodic increases and decreases, application and success rates have remained relatively flat since AY 09/10.
SECTION THREE:

Overview of the CSUPERB review process

Due to current award amounts, CSUPERB grants are intended to **seed, not sustain**, programs and provide professional development opportunities.

The goal of the CSUPERB grant programs is to set faculty PI’s up for success in winning follow-on funding from external-to-the-CSU funding agencies.

The reasoning is that more dollars supporting CSU faculty translates into more cutting-edge, excellent learning opportunities for students.
CSUPERB-funded projects reflect “convergence” of or “integrative” disciplines addressing biotechnology projects

- We accept proposals from tenure-track CSU faculty and CSU students from life sciences, physical sciences, computer and clinical sciences, engineering, agriculture, math and business

- Funded projects **fuse biology and technology**
  - To see what CSUPERB is funding, see project abstracts at: [http://www.calstate.edu/csuperb/grant-abstracts/author.shtml](http://www.calstate.edu/csuperb/grant-abstracts/author.shtml)

- For a list of current focus or application areas, see BIO’s Biotech Now: [http://www.biotech-now.org/](http://www.biotech-now.org/)
  - Technologies and Tools
  - Health Care Applications
  - Agricultural Production
  - Food Biotechnology
  - Industrial and Environmental Applications
  - Pandemics and Biodefense
  - DNA Fingerprinting
  - Intellectual Property
  - Ethical Practices

CSUPERB makes funding decisions based on:

- final ranked lists from peer review meeting
- available budget
- program priorities

There is no ‘formula’ for campus or disciplinary distribution of funds. The campus distribution depends on applications received.
CSUPERB Review Panel Composition (2014-15)

CSUPERB Program Priorities

- Innovative projects that can garner follow-on funding (to fund more student research opportunities & high-impact practices*)
- Seed funding to impact program trajectories
- System-wide impact
- Innovative curriculum development (Vision & Change recommendations)
- CSU faculty-student research teams
- Multi-disciplinary partnerships
- Biotechnology focus

Not all grant programs can address all program priorities & that is why CSUPERB has multiple grant programs (with differing review criteria). The Requests for Proposals issued each fall reflect the program priorities set by the CSUPERB Presidents’ Commission and the Strategic Planning Council each summer.

Read the CSUPERB Strategic Plan for further insights.

*https://www.aacu.org/leap/hips
CSUPERB Major Grant Review Process

- Proposals sent to CSU faculty reviewers (~10 each) in March
  - Reviewers are FCG representatives, CSUPERB PIs, and ad hoc experts as needed
  - Usually ~ 60% of reviewers have reviewed proposals for federal agencies (USDA, NIH, NSF, etc.)
  - Conflicted reviewers are identified and must not be in room for discussion

- Written reviews due in CSUPERB office early April BEFORE in-person review meeting
  - Reviewers do not have access to other reviewer comments until written reviews submitted

- In-person review meeting held in early April

- Award / Non-Award Letters, along with written reviews, sent out to applicants in late April

CSUPERB Review Panels:

We try to assign two “subject area expert” reviewers and one “generalist” reviewer to every proposal

CSUPERB review criteria include general, non-scientific merit criteria that generalists can evaluate

Generalist reviewers usually ask the best questions and find ‘logic holes’ in proposals and discussions!
How does the discussion go?

• Panel Chair will call the start of each proposal review discussion (~ 15 minutes each!)
  - Reviewers with conflicts will leave the room before discussion begins

• Primary reviewer presents short synopsis of proposal, along with reasons (strengths and weaknesses) for their initial overall score

• If other two primary reviewers have different thoughts than those already expressed, they comment on proposal and their reasons for the initial score, as well

• After primary reviewers have weighed in, the discussion is opened to the entire panel for Q&A, with a laser-like focus on the review criteria

• When discussion has run its course, Panel Chair will ask if primary reviewers want to change their initial scores based on the discussion

• Panel Chair will announce range of scores allowed (reviewers must vote within range). Admins will collect scores ALL panelists in the room.

WATCH 15 minute NIH video “NIH Peer Review Revealed” (CSUPERB review nearly identical):
http://www.youtube.com/watch?v=DBdi64dQoA

What happens next?

• CSUPERB admins calculate final, average scores – and a ranked list of proposals is produced from each review panel

• CSUPERB makes funding decisions based on:
  - final ranked lists from peer review meeting
  - available budget
  - program priorities

• Award and Non-award letters are sent out to applicants, along with written reviews

• CSUPERB releases an announcement about proposals funded at:
  www.calstate.edu/csuperb

• After a couple of weeks, CSUPERB updates the proposals funded database at:
  http://www.calstate.edu/csuperb/grant-abstracts/author.shtml
Anatomy of a CSUPERB Request for Proposals

• Written for both applicants and reviewers!

• Program description usually includes “strategic intent”

• Review criteria are the ONLY criteria used in review of the proposal package (poor spelling and bad grammar may reduce enthusiasm for the proposal, and if outstandingly bad, might be mentioned in the overall weaknesses section – but it should not factor into the overall score)

• Eligibility section usually expands on review criteria and is used in administrative review (before proposals are passed to review panel)

• Reviewers MUST consider all criteria – not only the scientific merit of the application! – but each reviewer synthesizes criteria into an overall score based on his/her enthusiasm for the proposal

2015 CSUPERB Review Criteria

ALL GRANT PROGRAMS:
• Projects must be original/innovative
• Project must be feasible (& in some way sustainable via follow-on funding, institutional support, etc.)

NEW INVESTIGATOR, RESEARCH DEVELOPMENT & PROGRAMMATIC:
• Involve or engage CSU students

JOINT VENTURE:
• Must demonstrate meaningful partnerships

NEW INVESTIGATOR & RESEARCH DEVELOPMENT:
• Consideration of previous or current grant support
ADMINISTRATIVE REVIEW:

If proposal is passed to review panel, CSUPERB program office considers it biotechnology-related.

If you want to find out if your proposal is biotechnology-related, call the program office before the proposal deadline.

SECTION FOUR: ANALYZING AN RFP

Which one are you interested in?

- New Investigator Grant
- Research Development Grant
- Joint Venture Grant
- Curriculum Development Grant
Tip #3:

Grantsmanship requires life-long learning!

Reach out for advice early and often. Luckily today there are many resources online.

*** Subscribe to CSUPERB RSS Feeds at the blog (www.csuperb.org/blog)

*** Consider following grant-writing blogs like RockTalk (http://nexus.od.nih.gov/all/rock-talk/), Medical Writing, Editing and Grantsmanship (http://writedit.wordpress.com/) or your own campus Research office newsletters and updates

CSUPERB Program Information

• Grants Webpage  
  http://www.calstate.edu/csuperb/grants/
• Awards Webpage  
  http://www.calstate.edu/csuperb/awards/
• Guidance Documents for PIs  
  http://www.calstate.edu/csuperb/grants/principal-investigators/
• Report Forms  
  http://www.calstate.edu/csuperb/grants/report-forms/
• Report Submission  
  https://www.csuperb.org/GrantReports/GrantFinalReportRequest.php

*** Subscribe to CSUPERB RSS Feed at  
www.csuperb.org/blog!
Give attention to the relevant, special sections of a given RFP...

- Meaningful Involvement of Students
- Timeline/Milestones of Project
- Details about Follow-on Funding Sought
- Qualifications of Investigator or Campus Resources
- Detailed, Committed Letters of Support (on letterhead!)

Innovative...?

- Why is what your proposing different from other things out there in the literature?
- This requires you give the reviewer necessary background or context!
- Does it answer an unmet need? a societal need? will it move the field forward?
- Don’t assume reviewers won’t Google!
Feasibility...the oft-forgotten review criteria

- Can the project be performed in the time available?
- ...with the funds requested?
- ...with the personnel proposed?
- ...with the equipment available or proposed?
- ...with the materials available or proposed?
- Did the PI demonstrate her/his qualifications?