BioSNTR

FY 15 Annual Report & Budget Presentation

Research & Commercialization Council Meeting

June 11, 2015 - 1:00 – 4:30 p.m. (CST)

Sioux Falls, SD

Adam Hoppe

Center Director

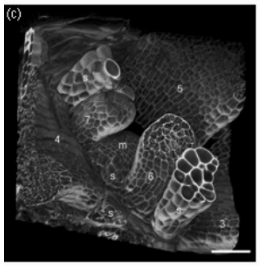
Major Research Highlights #1

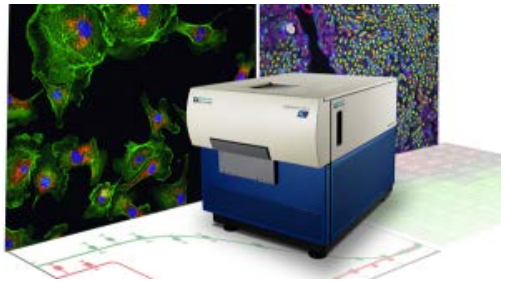
Faculty Hires:

Dr. Rob Anderson (SDSMT) Superresolution Imaging
Dr. Qin Ma (SDSU) Next Gen Sequencing Bioinformatics
Dr. Hongli Sun (USD) Biomaterials
Dr. Severine Van slambrouck (SDSU) Imaging/Tumor Biology
Offer Pending (SDSMT) Advanced Molecular Imaging
2 Offers Pending (USD) Biomaterials

Equipment & Infrastructure

State of the art microscopy
-Imaging of molecules within cells
-Imaging of cells within tissues





High Performance Computing

-Enabling research in the genetics of plants and animals

Packaging medicine for clinical trials

Major Research Highlights #2

Scientific Advisory Board Meeting (March 2015)

Janet Oliver, Ph.D., Regents' Professor Emerita and Harvey Chair, Department of Pathology, University of New Mexico School of Medicine (Chair)

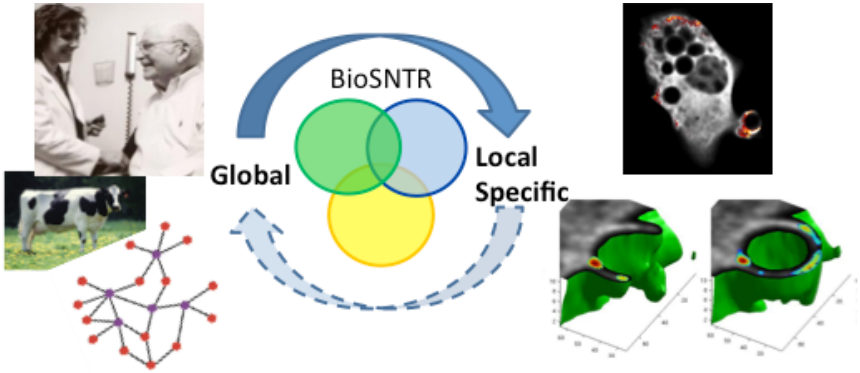
Vasant Honavar, Ph.D., Professor and Edward Frymoyer Chair of Information Sciences and Technology, Penn State University

Hari Shroff, Ph.D. NIH Intramural Investigator and Chief, Section on High Resolution Optical Imaging, National Institute for Biomedical Imaging and Bioengineering (NIBIB)

Stephen Howell, Ph.D., Professor of Genetics, Development and Cell Biology, Iowa state University

- Define the biological research identify of BioSNTR
  - Build on Hoppe's research direction (Macrophage/immune function)
  - Build on Subramanian's research direction (Soybeans/Nitrogen Fixation)
  - Integrate biomedical engineering into ongoing research projects.
- Strengthen research teams
- Focus on building the basic science with and eye toward key industry applications

Understand the body's response to infections

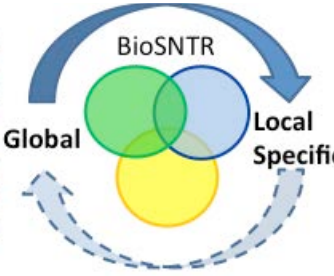


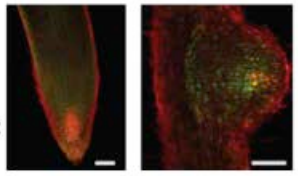
Human and Animal Health

Macrophage Cell Biology

Create better soybean plants

Improved soybeans





root tip nodule

Plant tissue development

Collaboration

Higher Education and Industry:

- Team Science – our strategy is focused on building research teams across SD.

  Body's ability to fight off diseases

  Biomaterials for medical devices

  Plant/ Agriculture Production

- Seed private sector research partnerships :
  - SAB Biotherapeutics – Development of therapeutic antibody for treatment of influenza.
  - Sanford Health – Development of new biomaterials for repair of the esophagus.
  - Mastel Precision Surgical Instruments Inc. – Development of a sensor for dry eye and treatments.

National:

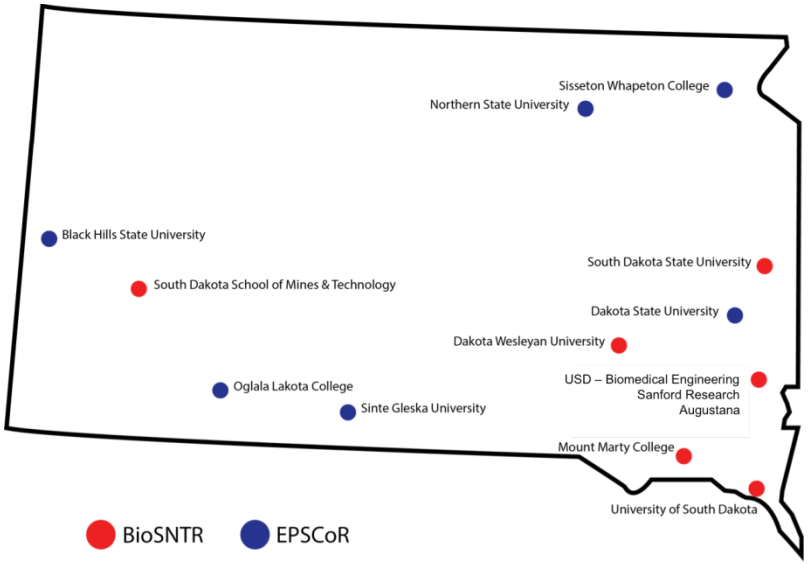
- Developing partnerships with other national research centers of excellence and academic researchers.

Collaboration

EPSCoR Partnership/Activity

Joint strategic plan.

Education and outreach goals.



- **Goal 1: Research** - Expand South Dakota's biotechnology research capacity by developing a trans-disciplinary university/industry research center focused on controlling cell function through manipulation of signaling biochemistry and its spatio-temporal coupling to genetic regulatory networks
- **Goal 2: Education/Workforce Development** - Increase the number of STEM graduates skilled in informatics and biosciences at all levels by partnering industry with K-16 education and research need to meet the growing workforce needs of South Dakota.
- **Goal 3: Diversity** - Broaden participation in South Dakota's STEM education and research enterprise by strengthening partnerships between public, private and tribal higher education to in order to achieve the outcomes of the state science and technology plan.
- **Goal 4: Sustainability** - Ensure continued growth in South Dakota's targeted research and economic sectors by establishing new collaborations and strengthening existing ones among industry, education, and government.

Grant Activity

- Individual investigator activity
- 5 investigators submitting R01 applications in FY16
- Focus on BioSNTR collaborative grants
- What defines a BioSNTR grant?

Fiscal Year Activity	*Pending*	*Declined*	*Awarded*
Previous Fiscal Years			
Total Number	11	1	3
Funding Amount			
Total	***$7,525,140***	***$900,000***	***$20,573,811***
Fiscal Year 2015			
Total Number	20 (7)	7 (2)	4 (0)
Funding Amount			
Total	***6,220,476*** ***(2,823,587)***	***12,287,707*** ***(883,477)***	***1,029,366***
Comprehensive Total	***$13,745,616***	***$13,187,707***	***$21,603,177***

Center Funding

- Center funds counted here are within the BioSNTR – what to count?
  - Faculty Salaries?
  - University contributions?
- NSF Award (Start date: 8/1/14)
- NSF CAREER award

Fiscal Year	*State*	*Federal (NSF EPSCoR)*	*Federal (New)*	*Industry/Other*	*Total*
FY14	594,164	0	282,934		877,098
FY15	2,847,951	*1,930,046*	*1,029,366*		5,837,010
Total	***$3,442,115***	***$1,930,046***	***$1,312,300***		***$6,684,461***

Job Creation

- Workforce Development
  - Research Associates and Technicians
  - New Tenure Track Faculty
  - Graduate Students
  - Undergraduate Students
  - Program Manager

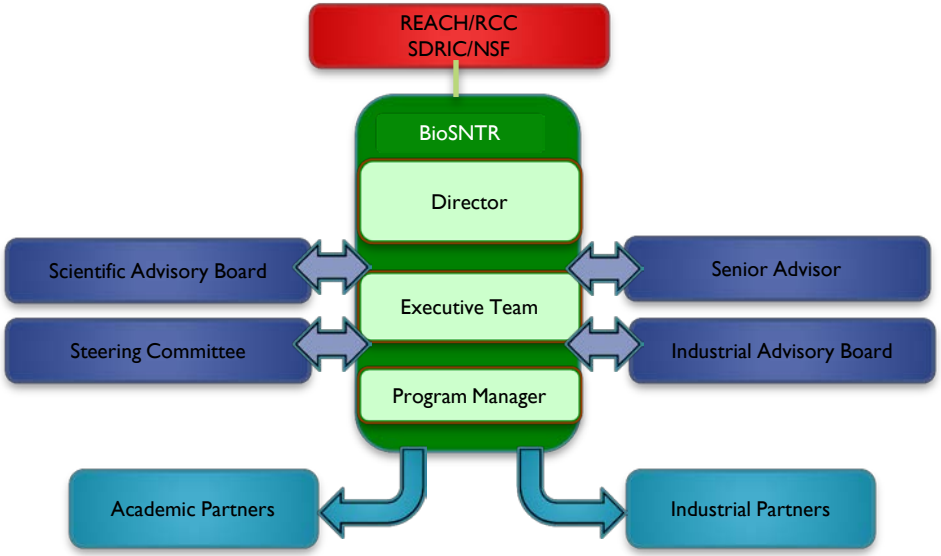
FTE Supported	*Undergraduate*	*Graduate*	*Researcher*	*Total*
State Funding	12		7.5	19.5
University Funding				
External Funding	15	11	2	28
Total	***27***	***11***	***9.5 (includes staff positions)***	***47.5***

Sustainability

- Collaboration Agreement – Across SDSU, USD, SDSMT
  - Defines indirect cost recovery
  - Creates a steering committee
  - Delineates roles of Director, Executive Team and Program Manager
  - Management of intellectual property
- Grant Identification Guidelines
- Expectations Document for new and existing faculty
- Membership Policy

"Strengthen our identity"

"Define our industry"



IP & Commercialization Activity

- Construction of cGMP facility
- Clinical relationships
  - Sun + Fong + Baumgarten (Orthopedic Institute)
  - Mani + Kelly (Sanford, Master Research Agreement in Progress w/ USD)
  - Deng + Jones-Sapienza (Sanford)
  - Peery (Sanford)
  - Berdahl (Vance Thompson Vision)
- Industry Relationships
  - SAB Biotherapeutics
  - Eleison Pharmaceuticals (+ Intelgen)
  - Nanoblood RBC
  - Mastel Precision Surgical Instruments

One Startup Company! (LLC)

Frequency	*Disclosure/Under Review*	*Provisional Patent(s) Filed*	*Patent(s) Issued*	*License Agreement*
Previous Fiscal Years	3			
Fiscal Year 2015	1			
Total	***4***			

Total FY' 16 Budget Request

Budget Classification	*Expenditures*
Personnel	
Existing Senior Personnel	158,716
Anticipated New Senior Personnel	147,552
Post Doctoral Associates	260,934
Graduate Students	0
Undergraduate students	63,200
Technicians/Clerical	284,446
Fringe Benefits	240,813
Additional Expenditures	
Equipment	621,000
Supplies	232,942
Travel	0
Contractual Arrangements	80,000
Other- Startup Funds	658,347
Total Direct Costs	***$2,872,950***

Carry Over Request

- Anticipated carryover
  - ~$150K
  - Major allocated expenses:
    - $786K for Multiphoton Microscopy Core
    - $500K for startup packages

Special Project Funding Request

- 2nd BioSNTR Seed Funding Opportunity
  - RFP focused on tying industry to BioSNTR teams
  - Issue RFP in Jan 2016
  - External review process
  - Awards issued April 2016

Special Project - Budget

- 2nd BioSNTR Seed Funding Opportunity
  - Carryover Funds = $150,000
  - External reviewers = $15,000
    - Use of EPSCoR review service TIG
  - Awards = budget of ~$50,000 per award
    - Number of awards dependent on budgetary constraints

Special Project - Accountability

- 2nd BioSNTR Seed Funding Opportunity
  - RFP focused on tying industry needs to BioSNTR research teams.
  - RFP will require:
    - Team science
    - Industry partner
    - Timeline of project (12 months)
    - Anticipated outcomes
    - Metrics for evaluation of success
    - Projected future projects/grants/publications/partnerships/patents stemming from results of proposed project
- Following external review, award decisions will be made at the Scientific Advisory Board Meeting.

Conclusion/Summary

- BioSNTR is meeting proposed milestones.
  - Coordinated efforts across 8 institutions (15 departments)
  - Faculty Hires
  - Infrastructure: Tools and People
  - New Industry Partnerships
  - Scientific Milestones

Continued development:

- Publications & Grants resulting from team efforts.
- Enhance bioscience identity/impact.
- Shape and build industry collaborations through seed grants and workforce development.