UCF-College of Medicine

Sampath Parthasarathy, PhD., MBA, FAHA
Associate Dean for Research
Florida Hospital Chair in cardiovascular Sciences
Goals

1. To have a robust, multi-disciplinary research program in major areas of biomedical research and to be able to compete with other Universities by being accommodative, inclusive, and evolving.

2. To train young scientist by having an active MS and Ph.D. programs.

3. To mentor and train young faculty.

4. To generate research revenue for self sustenance and for future growth.

5. To engage in entrepreneurial discoveries and commercialization.
# Burnett School Faculty

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Department</th>
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<tbody>
<tr>
<td>Dr. Raheleh Ahangari</td>
<td>Assistant Professor</td>
<td>Neurodegenerative Diseases</td>
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<tr>
<td>Dr. Deborah A. Altomare</td>
<td>Assistant Professor &amp; Director of Transgenic Facility - Cancer</td>
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<td>Dr. Robert Borgon</td>
<td>Assistant Professor</td>
<td>Cancer</td>
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<tr>
<td>Dr. Ella Bossy-Wetzel</td>
<td>Associate Professor</td>
<td>Neurodegenerative Diseases</td>
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<td>Dr. Karl X. Chai</td>
<td>Associate Professor</td>
<td>Cancer</td>
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<td>Dr. Debopam Chakrabarti</td>
<td>Professor</td>
<td>Infectious Diseases</td>
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<td>Dr. Ratna Chakrabarti</td>
<td>Associate Professor</td>
<td>Cancer</td>
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<td>Dr. Zixi (Jack) Cheng</td>
<td>Associate Professor</td>
<td>Cardiovascular, Neurodegenerative Diseases</td>
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<td>Dr. Alexander M. Cole</td>
<td>Professor &amp; Ph.D. Program Coordinator</td>
<td>Infectious Diseases</td>
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<td>Dr. Henry Daniell</td>
<td>Pegasus Professor &amp; Trustee Chair</td>
<td>Infectious Diseases</td>
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<td>Dr. Victor L Davidson</td>
<td>Professor</td>
<td>Cancer</td>
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<td>Dr. Steven Ebert</td>
<td>Associate Professor</td>
<td>Cardiovascular</td>
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<td>Dr. Alvaro G. Estevez</td>
<td>Associate Professor</td>
<td>Neurodegenerative Diseases</td>
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<td>Dr. Cristina Fernandez-Valle</td>
<td>Associate Professor</td>
<td>Neurodegenerative Diseases</td>
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<td>Dr. Robert Gennaro</td>
<td>Associate Director</td>
<td>Medical Laboratory Science Program</td>
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<tr>
<td>Dorily J Hitchcock</td>
<td>Assistant Professor, Undergraduate Coordinator &amp; Director of Medical Laboratory Science Program</td>
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<td>Dr. Mellie W. Jewett</td>
<td>Assistant Professor</td>
<td>Infectious Diseases</td>
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<td>Dr. Travis Jewett</td>
<td>Assistant Professor</td>
<td>Infectious Diseases</td>
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<tr>
<td>Dr. Annette Khaled</td>
<td>Associate Professor &amp; Ph.D. Program Coordinator - Cancer</td>
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<td>Dr. Yoon-Seong Kim</td>
<td>Assistant Professor</td>
<td>Neurodegenerative Diseases</td>
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Our faculty list is growing-this is only a partial list....
Some of the topics studied at BSBS

Alzheimer disease
Aminoacyl-phosphatidylglycerol
Amyotrophic lateral sclerosis
Atherosclerosis
Bacterial infection
Cardiac insufficiency, metabolism
Catecholamines
Cell cycle and telomerase reaction
Cell cytoskeleton
Chron's disease
Chlamydia trachomatis infection
Computational biology
Demyelinating diseases
Diabetes
Dietary lipids
Enzyme and protein modifications
Heart failure
Host innate human defense
Hypoxia
Imaging
Insulin-like growth factor action
Leukocyte traffic
Lipids and lipoproteins-synthesis and assembly
Lyme disease
Malaria
Neuro-muscular diseases
Nitric oxide biology
Obesity
Oxidative stress
Ovarian cancer
Pancreatic cancer
Parkinson's disease
Peripheral nerve development
Plant mediated therapeutic proteins
Protein toxins
Seleno proteins
Signaling mechanisms
Stem cells in neurological and in CVD
Stroke
Topoisomerase and DNA modifications
KLF8, a focal adhesion kinase in cancer
Tuberculosis
Tumor biology
Vascular diseases
Themes:
To identify theme partners, identify common areas of research, identify emerging new areas, have active interactions within and outside the theme, identify current and future leaders, adopt students from MS and PH.D programs, have a successful training program and a training grant, and establish clinical coordination and relevance.

1. Cardiovascular Sciences
2. Neurodegenerative diseases
3. Infection, Inflammation, and Immunity
4. Cancer
5. Clinical and Translational Sciences
6. Structural, chemical, physical, and computational biology
7. Applied Research Initiatives?
8. Simulation
9. Genetics
10. Bioinformatics
11. Population research
12. Others

Goals of the themes:
1. To have one or two training grant in 3 to 5 years.
2. To have a critical mass of basic and clinical research partners in 5 years
3. To have a far reaching budget and have the ability to meet fiscal self sustainability in 3 to 5 years.
4. To earn the status of a “center” in the future.
Apoptosis, Cell Death, survival and growth

One of the recurring topics of research is cell death and survival. You want cancer cells to die and normal cells to survive. You want heart cells to live and function effectively while you want scavenger cells to clear the debris and give life to new cells. Many faculty focus on these aspects using a variety of cells, tissues, and whole systems.

In many instances growth and destruction are carried out by the same cell.
Some of us are studying the fundamental process of disease development and mechanisms. For example, Drs. Singla and I are interested in studying atherosclerosis or cholesterol deposits in the artery. My laboratory also is involved in translating the laboratory findings to human disease.
Stem cell therapy has become an important topic. We are developing technologies that would help to isolate these cells from blood in greater yields, differentiate into specific cell types, and study their abilities to improve tissue functions. Our interests include cardiac stem cells, neuronal cells, pancreatic cells etc.
Understanding advanced cancer requires advanced research. Many of our faculty study many areas of tumor biology and are creating innovative models for studying human cancers in small animals.
Parkinson’s disease, Alzheimer's, and other neurological disorders including ALS (Lou Gehrig's Disease), are major topics of study at BSBS. Many faculty members actively study biology of demyelination and potential treatment options.
Infection, Inflammation, and immune mechanisms

Our scientists study a variety of pathogen borne diseases (Lyme disease, malaria, Tuberculosis etc). Novel therapies are being developed at BSBS to understand and treat infectious diseases.
1. Mitochondrial metabolism:
   - Oxidative stress
   - Nitrosative stress
   - Apoptosis and cell death
   - Lipid synthesis
   - Antioxidant proteins
   - Fission and Fusion

2. Chaperones and secretory proteins
   - Apolipoproteins
   - Transport proteins
   - Heat shock proteins
   - Transcription proteins

3. Modifications
   - Protein modifications
   - DNA modifications
   - Signal modifiers

4. Hormone/other actions
   - IGF action
   - Tumor promoters and suppressors

5. Lipids and lipoproteins
   - Assembly and structure
   - Modifications
   - Immunology
   - Synthesis

6. Drug discovery and delivery
   - Malaria
   - Neurological diseases
   - Vascular diseases
Organize BSBS on topics:

a) Metabolic/Oxidative stress/Mitochondria
b) Stem cell biology
c) Macrophages, neutrophils, lymphocytes, NK cells and Inflammation
d) Bio-Imaging
e) Peptides, proteins and structural biology
f) Bio-informatics
g) Chemistry/physics and pharmacology
h) Cell and evolutionary biology
i) Ageing and degenerative diseases
j) Behavioral sciences
k) Clinical and molecular nutrition
l) Lipids, lipoproteins, and membranes
m) Nanobiology

n) Others?
**Strengths**

1. Animal models
2. Molecular biology
3. Microbiology and virology
4. Immunology
5. Stem cells
6. Bioinformatics
7. Simulation