Advisory Board of the Division of Mathematics and Natural Sciences
October 3, 2012

<table>
<thead>
<tr>
<th>In Person</th>
<th>Conference Call / Skype</th>
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<tbody>
<tr>
<td>Ms. Carol Conslato</td>
<td>Mr. Russell Artzt</td>
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<td>Dr. George Gubernikoff</td>
<td>Dr. Eric Block</td>
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<td>Mr. Mark Kupferberg</td>
<td>Dr. Samuel Daniel</td>
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<td>Dr. Penny Stern</td>
<td>Dr. Robert Davidson</td>
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<td>Dr. Barry Zaret</td>
<td>Dr. Marc Dichter</td>
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<td>Dr. David Fenster</td>
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<td>Dr. Michael Gottlieb</td>
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<td>Mr. Philip Harte</td>
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<td>Dr. Madeline Long</td>
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<td>Dr. Howard Moskowitz</td>
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<td>Dr. Kenneth Pickar</td>
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<td>Mr. Philip Schaenman</td>
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Advisory Board of the
Division of Mathematics
and Natural Sciences
October 3, 2012

Agenda

2:30 PM  Welcome by Provost James Stellar
2:35 PM  Welcome by Dean Larry Liebovitch
2:40 PM  Progress made on the Division Strategic Plan
2:55 PM  Presentations by Students
3:25 PM  Draft Proposals to Support Undergraduate Research
3:45 PM  Chair, Co-Chair, Committees
4:00 PM  Adjourn
Four Divisions

- Art and Humanities
- Education
- Mathematics and Natural Sciences
- Social Sciences

Division of Mathematics and Natural Sciences

- Biology
- Chemistry & Biochemistry
- Computer Science
- Earth & Environmental Sciences
- Family, Nutrition, & Exercise Science
- Mathematics
- Physics
- Psychology
Dean, Division of Mathematics and Natural Sciences

Larry S. Liebovitch
Dean of the Division since coming to Queens College in August 2010
BS Physics: City College of New York, CUNY
PhD Astronomy: Harvard University
Previous positions:
  Mt. Sinai School of Medicine, NY
  Columbia College of Physicians & Surgeons, NY
  Florida Atlantic University, Boca Raton, FL
Current Research:
  Mathematical models of how people behave in conflicts and psychotherapy
Division Update

Division Annual Budget:
• $22,000,000 (17M faculty, 3M adjuncts, 1M grad students, 1M supplies)

Dean’s Office Staff:
• Had only 1 full-time person in Dean’s Office, Ms. Linda Chan
• Hired a 2nd full-time person for budget / finance, Ms. Molash Alemayehu
• Appointed an Associate Dean, Dr. Matthew Huenerfauth, Computer Science

Outreach:
• Updated Division webpage (in 5 languages with videos by Department Chairs)
• Created Facebook page (facebook.com/QueensCollegeDMNS)
• Advertising Facebook (CUNY, private colleges, Queens/Nassau High Schools)
• Division brochure (in progress)
• Undergraduate Research Day, Sigma Xi Research Day: invited HS Students
• 3 All-Division faculty events to tempt faculty out of their “silos”: (FAIR, DMNS DMNS, FOOD)
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<tr>
<th>Inter-disciplinary Clusters</th>
<th>Scientific Computation</th>
<th>Neuroscience</th>
<th>Photonics</th>
<th>Urban Ecology</th>
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<td>Divison Strategic Plan Update</td>
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<th>New Hires</th>
<th>2011-2012</th>
<th>Changhe Yuan</th>
<th>Miss. State Bayesian Networks (CS)</th>
<th>Renee Goodwin</th>
<th>NYSPI Columbia Clinical Psych (Psych)</th>
<th>Plants, animals, people, air, water in New York City.</th>
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<td>Assistant Associate Professor</td>
<td>All these hires have external funding NIH, NSF</td>
<td>Liang Huang</td>
<td>USC Natural Language Processing (CS)</td>
<td>[William Blanford LSU, USGS Environmental Remediation (Earth, Environ. Science)]</td>
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<th>2012-2013 In progress</th>
<th>-Ecological Modeling (Bio)</th>
<th>-Probability, Biostatistics (Math)</th>
<th>-Photonic Mat'l (Phys)</th>
<th>-Urban Geologist (SEES)</th>
<th>-Experimental Neurorscience (Psych)</th>
<th>-Nanodevices (Chem)</th>
<th>-Immigration, Families (FNES)</th>
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<td>2013-2014 projected</td>
<td>-Quantum Chem. (Chem)</td>
<td>-Hi Perf. Comp. (CS)</td>
<td>-Cellular/Molec. (Bio)</td>
<td>-Nutrition (FNES)</td>
<td>-Experimental Biophotonics (Bio)</td>
<td>-Fast Spectrosc. (Chem)</td>
<td>-Economics (Eco, Urb Stds)</td>
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Student Presentations

Ms. Lauren Esposito (Anthropology, Neuroscience)
Mentor: Dr. John Dennehy
Research: Viruses that infect tuberculosis bacteria

Mr. Adam Lee (Computer Science)
Mentor: Dr. Heng Ji
Research: Combining information from different internet sources

Mr. Todd Gaugler (Mathematics)
Mentor: Dr. Dragomir Saric
Research: Geometry of fitting things together in space

Mr. Marcel Afrahim (Physics)
Mentor: Dr. Igor Kuskovsky
Research: Electrical fields in semiconductors
Identifying Unique viruses for TB Treatments

- **Tuberculosis:** 1.5 million die annually
- **Some viruses can kill TB bacteria**
- **Discovering which viruses can do this may lead to new treatments for TB**

Lauren has presented her results at:
- HHMI Science Education Alliance 4th Annual Symposium, Ashburn VA
- Northeast Regional Sigma Xi meeting, Queens NYC
- National Council on Undergraduate Research Conference, Ogden, UT

Lauren has a double major in Anthropology and Biology. She has been doing research, under Dr. Dennehy's guidance, for over a year.
Natural Language Processing

Current Research
• Multi-media information networks (Army Research Lab & NSF)
• Information Extraction and Wikipedia Knowledge Mining (NSF)
• NLP for noisy data (DARPA)

Adam has:
• Published 6 papers at the most prestigious international conferences and journals
• Awarded the Donald E. Kirkpatrick Award from Queens College
• Awarded the Philip Drummond Memorial Award from Queens College
• One of the three students in North America to participate in an NSF supported summer workshop.

• Adam Lee is now a PhD student continuing his research in Dr. Ji's lab.
Farey Tessellations

• Mapping points in a line to other points in a line.

• Shows special patterns.

• Could be useful in computer vision, comparing the edges of different objects to see how they resemble each other.
Physics and Applications of Light-Matter Interaction

Fundamental Physics:
• How electrical charges are constrained by electrical and magnetic fields

Applied Physics:
• Development of Ultra-efficient Solar Cells.

My experiments:
• We discovered that some materials have a built-in electric field.
• We need to determine this field to understand the material better.
• Method: Modulated Photoreflectance

Funding:
• NSF Award No. 40A94-0001
• DoE, BES, Grant No. DE-FG02-10ER46678
Draft Proposals: Support of Student Research

1. Conference Presentations:
Travel support for students to:
   - present their work at national conferences,
   - receive recognition for their accomplishments,
   - learn about other work in their field,
   - meet other scientists that will be helpful in their future career.

Raise: $5,000 per year for 5 years.

2. Summer Research Experience:
Stipends for students for summer research:
   - to spend time in the lab instead of part-time employment,
   - have supplies needed for their experiments.

Raise: $5,000 stipend/student (NSF rate of $500/week x 10 weeks)+ $1,500 lab supplies/student x 10 students = $65,000 x 2 years.
Division Advisory Board

Chair

Co-Chair

Committees
Thanks!

We very much appreciate that you have contributed your valuable time that helps us and most importantly helps our students here at Queens College.