

Application for Summer Research North Central College, Summer 2010

Applications Due Friday, March 5 (end of Week 9) to Dr. Peterson (SC105)

Name: _____ Major: _____

Fr So Jr Sr Possible Career Interests: _____

Contact information: phone: _____ e-mail: _____

- Please attach a cover letter to this form. In your cover letter should *briefly* introduce yourself and, in 250-500 words, explain why you would like to do research in the summer, why you would be an asset to a faculty member's laboratory group and how doing summer research fits into your long-term career goals.
- Please attach a current resumé to this form.
- Please place a check mark by each class you will have taken by the end of Spring 2010 term.

___ CHM 141	___ CHM 222	___ BIO 102	___ BIO 202	___ MTH 151
___ CHM 142	___ CHM 205	___ BIO 147	___ BIO 216	___ MTH 256
___ CHM 220	___ CHM 210	___ BIO 200	___ BIO 260	___ PHY 143
___ CHM 221	___ BIO 101	___ BIO 201	___ PSY 250	___ PHY 245

- The following is a list of NCC Science faculty who plan to work with students this summer, depending on funding considerations. Please rank them in order of your preference from 1-6, with **1 being the faculty member with whom you are MOST interested in working**. On p. 2 of this application packet you will find short descriptions of the research interests of each of these faculty. (*More information at www.noctrl.edu/biology or www.noctrl.edu/chemistry; click "Research"*)

_____ **Dr. Jeff Bjorklund** *Bio-organic chemistry.*

_____ **Dr. Adalie R. Motta** *Organic and Organometallic.*

_____ **Dr. Paul Bloom** *Experimental Particle Physics.*

_____ **Dr. Nancy Peterson** *Biochemistry and neuroscience.*

_____ **Dr. Paul Brandt** *Inorganic chemistry.*

_____ **Dr. Jon Visick** *Microbiology.*

_____ **Dr. David Horner** *Physical chemistry,
chemical physics.*

_____ **Dr. Christine Weillhoefer** *Wetland Ecology*

_____ **Dr. Stephen Johnston** *Molecular Biology.*

In most cases, students selected for Summer Research will be paid a \$1,800-2,500 stipend for six to eight weeks of work, from June 14th to August 6th. Most labs expect a minimum of 30-35 hours of work per week. On-campus housing can be arranged but you will have to pay for the housing out of your stipend.

Will you require on-campus housing? ___yes ___no ___not sure

Please see the last page of this form for information on a competitive summer research fellowship! Check below if you would like to be considered, and be sure to include the additional application materials specified.

_____ I would like to be considered for the Kotten Research Award (\$3,000 stipend)

Research Interests

Summer 2010

- Dr. Jeff Bjorklund** *Bio-organic chemistry*: (1) Use of quantitative NMR to analyze complex mixtures produced from yeast fermentations and the Maillard reaction. (2) Investigation of transesterification reaction processes (3) Organic synthesis
- Dr. Paul Bloom** *Experimental Particle Physics*: Search for radial excitations of pseudoscalar and vector mesons through an extended maximum likelihood analysis of the BaBar dataset.
- Dr. Paul Brandt** *Inorganic chemistry*: using Green Chemistry for organometallic synthesis. Synthesize compounds, one of which is an ionic liquid, to separate normally difficult product mixtures.
- Dr. David Horner** *Physical chemistry, chemical physics*: (1) NMR investigation of the rate of dissociation of HSO₃⁻. (2) Development of thermal lens calorimetry experiment for CHM 340. (3) Interfacing lab equipment to the PC using LabView software. These projects will likely begin in early July.
- Dr. Steve Johnston** *Molecular Biology*: How do cells sense whether or not nutrients are present? How do they use that information to determine whether or not to divide? We will be using biochemical, genetic and cell biological techniques to help understand the role of the Yak1 kinase in processing this kind of information in the eukaryotic yeast *Saccharomyces cerevisiae*.
- Dr. Adalie R. Motta** *Organic and Organometallic*: Synthesize novel catalyst for Olefin Metathesis, Heck and Ullmann reactions. Study catalysts new applications and develop new catalysts ligands that will deliver the catalysts under environmentally friendly reaction conditions.
- Dr. Nancy Peterson** *Biochemistry and neuroscience*: Complete the construction of a cDNA library and from *Ambystoma sp.* tail tissue and identification of a tail secretion protein as a route to identifying specific proteins in the toxic tail secretions of this salamander.
- Dr. Jon Visick** *Microbiology*: using genetic and molecular techniques to study protein repair and its effect on aging (long-term survival) of *E. coli* bacteria. Two NIH-funded full-time positions may be available this summer in addition to 2 NCC-funded part-time stipends. If you are interested in these full-time positions, please talk to Dr. Visick.
- Dr. Christine Weilhoefer** *Wetland Ecology*: Investigating how nutrient concentration and grazing pressure affect plant growth and species diversity in tidal wetlands. This research will be conducted in tidal wetlands along the Pacific coast and be based out of the US EPA research laboratory in Newport, Oregon. It will combine field and laboratory research. Students may obtain low-cost housing at Oregon State University's Hatfield Marine Science Center.

Irvin A. Koten Research Award

An endowed fund established in honor of Dr. Irvin A. Koten's long and distinguished teaching career at North Central College will provide a \$3,000 stipend to support eight weeks of full-time summer research for an outstanding sophomore or junior chemistry or biochemistry major. More information will be available shortly on the chemistry Web site.

Selection requirements:

- Declared major in Chemistry (preferred) or Biochemistry
- Completed organic chemistry sequence by the beginning of summer
- Sophomore or junior status by the beginning of summer
- Cumulative GPA 2.75 or higher
- Commitment to spend a minimum of 40 hours/week on the research project for 8 weeks and to write a report at the end of the summer.
- Application form, resumé and cover letter.
- 250- to 500-word essay discussing why you are a good candidate for the Irvin A. Koten Research Award.