

Research Day Abstract Submission Page

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After filling out this abstract submission form, please do not forget to upload a Word copy of your abstract. The link to do this is at the end of this form.

Email me if you have any questions (kubalaks@musc.edu).

Thank you.

Dr Kubalak

Response is only partial and is not complete. Response was added on 09/23/2019 8:13am.

Presenting Author First Name	Carter
Preferred First Name (for name badge)	Carter
Presenting Author Last Name	Allen
Presenting Author Email Address	allecart@musc.edu

LIST the the funding sources for the work described in the abstract (use abbreviations and separate by commas). (Use funding source abbreviations where possible)

SCTR TL1 Training Program

Select presenting Author college affiliation.	<input type="radio"/> Dental Medicine (DMD, PhD) <input type="radio"/> Dental Medicine (MD, PhD) <input type="radio"/> Medicine <input checked="" type="radio"/> Graduate Studies (MSTP) <input type="radio"/> Graduate Studies <input type="radio"/> Health Professions <input type="radio"/> Nursing <input type="radio"/> Pharmacy (If you are entering your abstract as a high school or college student and were performing summer research, select the college of your mentor.)
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Presenting Author Department	Public Health Sciences (If you are entering your abstract as a high school or college student and were performing summer research, enter the name of your Department followed by the name of your College Institution where you go to school.)
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Your full name and email address if you are submitting this on behalf of the presenter.

Principal Investigator (PI) First Name	Dongjun (This is the name of the Investigator who's lab you were in where you performed the work for the abstract)
Principal Investigator (PI) Last Name	Chung
Principal Investigator (PI) Email	chungd@musc.edu
Principal Investigator (PI) Department Affiliation	Public Health Sciences

List the OTHER Authors (do NOT re-enter the presenter's name or the PI).
Enter all other authors names for the abstract. Enter full name (first last) using a common between each co-author.

Select the Category that applies to the presenting author and type of study described in the abstract (if applicable)	<input type="radio"/> High School/College Student <input type="radio"/> Medical/Dental Student - Social/Behavioral Sciences <input type="radio"/> Medical/Dental Student - Basic/Clinical Sciences <input type="radio"/> Masters Student - Social/Behavioral Sciences <input type="radio"/> Masters Student - Basic/Clinical Sciences <input type="radio"/> Other Health Professions Student - Social/Behavioral Sciences <input type="radio"/> Other Health Professions Student - Basic/Clinical Sciences <input type="radio"/> PhD - Social/Behavioral Sciences <input checked="" type="radio"/> PhD - Basic/Clinical Sciences <input type="radio"/> Postdoc, Resident, Fellow, Staff Scientist <input type="radio"/> Research Specialist, Research Assistant, Technician <input type="radio"/> Uncertain
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Year of Matriculation	<input type="radio"/> Undergraduate/College/High School <input type="radio"/> 2019 <input type="radio"/> 2018 <input checked="" type="radio"/> 2017 <input type="radio"/> 2016 <input type="radio"/> 2015 <input type="radio"/> 2014 <input type="radio"/> 2013 <input type="radio"/> prior to 2013 (This is the year in which you began in your current program)
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In one or two words, enter the scientific topic of your research	Bioinformatics (Please only use one or two words. For example; cancer; cardiovascular; rehabilitation sciences; neuroscience; etc.)
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Title of Abstract (200 characters or less).

Improving identification of hub genes and gene sub-networks through data integration with the stochastic block model

Abstract (300 words or less) Keep in mind abstracts are printed as a single paragraph. (It is suggested you copy/paste the abstract from a word processing program such as Word. Do not forget to check your word limit of 300 words or less.)

The study of gene networks associated with a given disease area often involves analysis of multiple sources of network data that feature weak and widespread signal and low signal-to-noise ratio. In this setting, interest commonly lies in detection of possible latent community structure, such as unknown hub genes and sub-networks within a given gene network. The stochastic block model (SBM) is a flexible statistical model with the ability to perform community detection. However, the standard SBM still suffers from poor performance in the case of weak and widespread signal. With improvement of genomic profiling technologies, multiple relevant experiments for a given disease area have become more abundant providing unprecedented opportunity for integrative analyses. Examples of such complimentary data sources are gene expression, DNA methylation, and more recently, literature mining data, each of which are concerned with measuring associations among a similar sets of genes and often feature low signal to noise ratio. To address the issue of weak and widespread signal in network data, we propose a data integration framework for the SBM, whereby multiple available data sources are combined into a unified network model. We show through simulation studies that our proposed method offers improved detection of hub genes and gene sub-networks for a variety of settings when compared to SBMs fit to single data sources or under alternative data integration approaches. In future work, we plan to extend our data integration method to the Bayesian setting to allow for inclusion of prior biological knowledge to guide detection of hub genes and gene sub-networks, and further improve SBM performance in the case of weak and widespread signal. In addition, we also plan to apply the proposed framework to the genomic studies of twins with systemic sclerosis (SSc) to help investigation of the genetic causes of SSc.

Keyword #1

Keyword #2

Keyword #3

Keyword #4

Delivery Method Last Year

☐ Did not present last year
☐ Oral ☒ Poster

Preferred Delivery This Year

☐ No Preference ☐ Oral
☒ Poster

Intellectual Property and Public Disclosure

Have you or your mentor thought about patenting the content of this research?

☒ No ☐ Yes

Could this research directly result in a new diagnostic, therapeutic, medical device or other advancement in healthcare?

☒ No ☐ Yes ☐ Unsure

***** PLEASE NOTE *****

If you or your mentor believe that, or are unsure if, this work could be patented and licensed at a future date, please contact the MUSC Foundation for Research Development (FRD)(frd@musc.edu) immediately. Your abstract will be posted to the Research Day website, will appear in the hardcopy program, and the poster and/or presentation is open to the public; all of which are considered a PUBLIC DISCLOSURE that will result in the loss of intellectual property rights and impact the ability to patent and license this technology. You MUST have agreed with your mentor on the content of your abstract and presentation. Please note that even if you withhold the abstract that the poster and/or presentation is still a PUBLIC DISCLOSURE. The FRD will help you take proper precautions to preserve the potential for patenting at a later date, or ensure that proper intellectual property protection is in place prior to Research Day. This will allow you to present at Research Day while properly preserving your patent rights.

Submitting your abstract into the Research Day database is NOT considered public disclosure and therefore, you will have the opportunity to edit the abstract on the recommendation of the FRD after submission.

You must select one these two choices:

☐ WITHHOLD abstract text from booklet and other online resources ☒ PUBLISH abstract

SIGMA XI AWARD

Sigma Xi Award

Sigma Xi will sponsor an award for best presentation between all qualified oral and poster submissions. The award will consist a \$100.00 cash prize and dues for one year membership in Sigma Xi.

Eligibility criteria are that either the student or the mentor must be an active member of Sigma Xi.

Please indicate below if you or your mentor is a Sigma Xi member.

☐ Yes

INTERPROFESSIONAL AWARD

Interprofessional Award

This award will be selected by a team of judges on behalf of the MUSC Office of Interprofessional Initiatives, and will be in the form of a framed certificate.

Eligibility criteria for this award:

1. A high quality research study with an accompanying excellent visual and oral presentation;
2. At least two investigators are from different colleges or one investigator is from one college and the faculty advisor from another college;
3. A brief description of the contributions made by each member of the research team to the conduct of the research project;
4. The interprofessional collaboration has enhanced the project in clear and identifiable ways.
5. Identification by selecting "Yes" in the above box relating to interprofessional research.

During your presentation, you must explicitly address how your project meets criteria #2, #3, and #4 above.

Does your presentation fit the above criteria as INTERPROFESSIONAL?

☒ No ☐ Yes

RALPH H. JOHNSON VA MEDICAL CENTER AWARD

The Charleston Research Institute will sponsor four Ralph H. Johnson VAMC Research Awards - two for oral presentations and two for poster presentations. 1st place is awarded \$500 and 2nd place is awarded \$200

Are VA resources (VA mentor's time and/or VA space and/or VA patients) used in your research?

☒ No ☐ Yes

JOHN VOURNAKIS INNOVATION AWARD

The John Vournakis Innovation Award, sponsored in part by Dr. John Vournakis and Marine Polymer Technologies, Inc. of Boston, and the Foundation for Research Development (FRD) will once again be awarded.

To be considered for this award, presentations must:

- 1) have the potential for development of intellectual property/patentable,
- 2) have commercial potential,
- 3) have high scientific merit, and
- 4) be innovative.

To be considered eligible for this category, all four criteria need to be met.

The overall combination of these criteria will decide the winners (first and second place) of the John Vournakis Innovation Award.

If your project satisfies all four of the above criteria, do you want to be considered for the John Vournakis Innovation Award?

☒ No ☐ Yes

HEALTH HUMANITIES AWARD

Research projects that meet the following criteria may be considered for the Health Humanities Award category.

1. Project aims to foster skills in critical thinking, analysis, observation, reflection, or communication among health science students through an arts/humanities educational intervention.
2. Project aims to improve patient experiences and/or outcomes or to promote resiliency among health care providers through an arts/humanities intervention.

A prize of \$100 will be presented to the first-place winner.

Does your project meet the above criteria? If so, would you like to be considered for the Health Humanities Award?

☒ No ☐ Yes

CENTER ON AGING AWARD

Basic, translational, and clinical research projects that focus on healthy aging or on the aging process and its relationship to diseases and conditions would be considered for the Center on Aging Award category. Clear explanation about the studies' relationship to aging and/or geriatrics must be included in the abstract. This award will be selected by a team of judges from the MUSC Center on Aging Executive Committee and Colleagues. First place will be awarded \$300 and second place will be awarded \$150, in both poster and oral presentations.

Does your abstract satisfy the above criteria for the award?

☐ Yes ☒ No

UPLOAD A COPY OF YOUR ABSTRACT

Upload a copy of your abstract here. It is best to use a Word document (.doc or .docx) since some symbols and special characters can be lost when pasting into the above abstract box.

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