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SUMMER 2018: UTHealth-CPRIT UNDERGRADUATE INNOVATION IN CANCER PREVENTION RESEARCH FELLOWSHIP: MENTOR RESEARCH OPPORTUNITY

(This is a Word table; use Tab to go from one blank to the next)

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School/Campus: Medical School/ Graduate School of Biomedical Sciences

Research Projects

Each fellow is expected to spend an average of 40 hours/week on their research project, organized seminars and innovation generation course

Students will click on the titles of projects they are interested in to see the description. Give your project an inviting name!

Projects that are not funded can also be submitted.

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<th>1</th>
<th>Title: Dissecting novel genetic elements from human cancers</th>
<th>Funding Source: CPRIT</th>
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Project Description: (100 words max)

Recent advances in genomic technologies and the ensuing deluge of genomic information related to cancer have accelerated the convergence of discovery science with clinical medicine. Successful translations of genomics into therapeutics and diagnostics reinforce its potential for personalizing medicine. For example, as one of the most important cancer genomic data resources, the Cancer Genome Atlas (TCGA) is a comprehensive and coordinated effort to accelerate our understanding of the molecular basis of cancer through the application of genome analysis technologies. We have dissected novel genetic elements through TCGA PanCancer efforts (TCGA, Nature Genetics, 2013), including RNA editing (Han et al., Cancer Cell, 2015), pseudogenes (Han et al., Nature Communications, 2014), alternative polyadenylation (Xiang et al., Journal of the National Cancer Institute, 2017), eQTLs (Gong et al., NAR, 2017), snoRNAs (Gong et al., Cell Reports, 2017, cover story), and circadian clocks (Ye et al., Cell Systems, accepted).

Contact with: public | patients | lab samples | animals | none x

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<tr>
<th>Project Status IRB</th>
<th>Yes</th>
<th>No</th>
<th>Laboratory safety protocol</th>
<th>Yes</th>
<th>No</th>
<th>Protocol Number</th>
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<td>IRB Number</td>
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Will the fellow be added to the protocol? Yes | No x

Source of fellow funding: CPRIT Training grant | Preceptor

NB: Please do not submit more than two projects. Fill out one form per project
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If mentor funding, will fellow take part in innovation course, seminars and cancer prevention related research?  

Yes ☐  No ☐

1. End Product(s):
   A. All Fellows:
      1. Complete a mini project explicitly using the tools of innovative thinking
      2. Prepare and present a research poster on their project
      3. Participate in the 90-second elevator speech competition for a prize award
      4. Write a 3-page reflection paper, describing the summer experience, including instances of applying skills for innovative thinking, and in what way, if any, the experience has affected career plans, goals (due one week before his/her last day)

   B. Project specific end products:
      Mentors’ please specify, e.g., GIS map to track whether and other environmental conditions for day laborer “corners” throughout Houston, design for a social network platform for follow-up with research participants, manuscript on xxx to be submitted for publication, abstract on yyy to be submitted to a scientific meeting
      1. Trainee will perform the data analysis to mining the TCGA data resources, and dissect novel genetic elements in human cancers, and we aim to submit a paper for publication.
      2. Meanwhile, trainee will also involve in other projects, such as collecting data, build a computational module, etc. This work will be included in other lab members’ manuscript.
      3. Trainee’s work may be part of the abstract to submit to The American Society of Human Genetics (ASHG) annual meeting this October, or American Association for Cancer Research (AACR) annual meeting next April.

Note to preceptors: Any confidentiality agreements regarding the project or data you are using (e.g. unpublished results) should be arranged between you and your fellow.

2. Fellows Activities:
   A. All Fellows
      1. Complete the Massive Open online Course (MOOC) on Innovation Generation- IMAGINE99x
      2. Apply the tools of innovative thinking in a mini-project
      3. Participate in 1-hour weekly group meetings and seminars in Houston and via ITV
      4. Participate in the elevator speech workshop and feedback sessions
      5. Take part in the mid-course review and brainstorming session on the use of the tools for innovative thinking
      6. Provide bi-monthly feedback to the program coordinator
      7. Meet with the preceptor weekly to discuss the training experience, progress, and challenges: Day and Time

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8. Submit a final review of training experience

**B. Project specific trainee activities**

*Mentors, please specify additional trainee activities, e.g., Trainee will commit to the design, analysis of a mini project XXX as part of a larger project?*

1. Trainee will learn to understand the data resource of TCGA, and propose a biological question to understand the molecular mechanism of cancer.

2. Trainee will perform the computational analysis to mining the high-throughput data, such as next-generation sequencing and microarray.

3. Trainee will need to illustrate the results through figures/tables.

4. Trainee will draft the manuscript/abstract.

5. Trainee will present the results through lab meetings or conferences.

**3. Learning Objectives:** *By the end of the summer experience, trainees will demonstrate that they can*

**A. All Fellows:**

1. Describe and apply the tools of innovative thinking to increase creativity.

2. Describe, in the reflection paper, at least 3 instances of applying one or more tools for innovative thinking.

3. Recognize potential conflict(s) of interest in scenarios provided in CITI training.

4. Develop interviewing skills for graduate school.

5. Develop skills for research poster design and presentation.

**B. Project specific learning objectives:**

*Mentors, please specify additional learning objectives, e.g. Trainee will be able to write instructions for low literacy audiences, design a mini project with supervision.*

1. Trainee will be able to write instructions for low literacy audiences, design a mini project with supervision.

2. Trainee will understand the large data resources, as well as precision medicine.

3. Trainee will learn the programming skills, such as perl/python or R.

4. Trainee will learn how to present the work.

5. Trainee will learn how to draft the manuscript/abstract.

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4. **Are there special fellow characteristics e.g., major, interests, language, culture or other preferences that would be desirable? Please specify:**
   Major in Biology, Computer Science, Statistics, Physics are acceptable. We expected the trainee who have the interests in large-scale data mining as well as precision medicine.
   
   Note to mentors: Any confidentiality agreements regarding the project or data you are using (e.g. unpublished results) should be arranged between you and your trainee.

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5. **Mentor Responsibilities**

1. Attend the orientation and the elevator speech competition

2. Be available for >8 weeks or have suitable substitute

   Will you be out for more than 2 weeks during the training period?  Yes  No

   If yes, when would you be gone and for how long?

   Who would serve as preceptor during your absence (name and credentials, please specify)?

   Name:

   Job title:

   E-mail:

   Phone number:  office:  Cell:

3. Meet with the fellow weekly – progress, challenges...

4. Encourage the use of the tools for innovative thinking

5. Notify the project coordinator if the fellow is not meeting the agreed upon responsibilities.
   (This should be as early as possible to allow problem solving.)

6. Complete an evaluation of the fellow at the end of the program

7. Provide feedback on the program experience to the program coordinator

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