Regulated Research Institutional/Industrial Setting Form (1C)

This form must be completed AFTER experimentation by the adult supervising the student research conducted in a regulated research institution, industrial setting or any work site other than home, school or field.

Student's Name(s) Enyo Okeoma

Title of Project Semen extracellular vesicles (SEVs) contain proteins that inhibit HIV-1 reverse transcriptase RNA-dependent DNA polymerization in vitro

To be completed by the Supervising Adult in the Setting (NOT the Student(s)) after experimentation:
(Responses must be on the form as it is required to be displayed at student's project booth; please do not print double-sided.)

The student(s) conducted research at my work site:

1. Did you or your proxy (e.g. graduate student, postdoc, employee) mentor or provide substantial guidance to the student researcher? ☑ Yes ☐ No
   a. If no, describe your and/or your institution's role with the student researcher and his/her project (e.g. supervised use of equipment on site without ongoing mentorship and sign below.

   b. If yes, complete questions 2–5.

2. Is the student's research project a subset of your ongoing research or work? Use questions 3, 4 and 5 to detail how the student's project was similar and/or different from ongoing research or work at your site. ☑ Yes ☐ No

3. Describe the independence and creativity with which the student:
   a. developed the hypotheses or engineering goals for the research project

      The student initially suggested a few ideas for her project. We then did a few literature search, discussed the ideas, and ended up agreeing on a plan around the same topic, and aligned with research ongoing in the lab. The student particularly focused on the feasibility of the project within the duration of the training whereas I was more inclined to ensure the alignment of the proposed project with the aims of the grant that funds the project.

   b. designed the methodology for his/her research project

      After the first pilot experiments where Enyo was in learning mode, she quickly became independent. Enyo was clearly well-organized whether in saving samples/reagents or in taking extensive notes. I was truly impressed by Enyo's creativity in conducting research. First, she set her bench space to her liking. Some of the experiments dealt with 4 kinetics of over a period 30 minutes with multiple aliquot withdrawals. Instead of taking two hours to finish the kinetics, she used 3 chronometers and her phone to set up the 4 kinetics reactions simultaneously, with 5 minutes delay in the start of each reaction, finishing thus the kinetics in only 45 minutes. This multitasking is essential for the success of a scientist and Enyo excelled at it. I have seen her vortexing a tube in one hand and preparing other tubes in the other.

   c. analyzed and interpreted data

      Enyo performed all of the experiments and collected the corresponding data independently. She neatly saved the raw data by date and experiment title on the secure lab drive in her dedicated folder. The student used to always correctly analyze the data, despite the complexity of the question. After each experiment, Enyo revisited her concentrations, kinetics time, gel imaging, and other parameters in order to optimize her experiments. I give the student the credit in carrying the project forward. Furthermore, Enyo was able to put her results into PowerPoint slides and present them in lab group meeting, a task that is usually reserved to PhD students and postdocs.

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Regulated Research Institutional/Industrial Setting Form (1C) Continued

Student's Name(s) Enyo Okeoma

4. Detail the student's role in conducting the research (e.g. data collection, specific procedures performed). Differentiate what the student observed and what the student actually did.

Enyo performed all of the experiments. She used to isolate and characterize SEV from seminal fluid. She also synthesized DNA and RNA in vitro by PCR and T7 polymerase, respectively. She optimized the parameters of these techniques which allowed her to produce significant amount of RNA template that was even used by others in the lab. She later performed in vitro HIV reverse transcriptase assay where she added different amounts of SEV. This assay involves kinetics of RNA reverse transcription into DNA which she analyzed by gel PAGE. The DNA was labeled with fluorescent tag which allowed Enyo to read the gel by fluorescence imaging. Enyo then used to quantify the kinetics involving SEV-mediated inhibition of HIV RT using ImageJ software and plot her results in Prism software from which Enyo used to get the SEV-inhibition constants. Enyo also performed the same experiments using SEV purified DNA, RNA and proteins. During her training, Enyo mastered the above mentioned techniques.

5. Did the student(s) work on the project as part of a group? ☑ Yes ☐ No
If yes, how many individuals were in the group and who were they (e.g. high school students, graduate students, faculty, professional researchers)?

Yes. There were three people in the group. Enyo Okeoma (high school student), Dr. Yuan Lyu (postdoc) and myself (senior postdoc).

I attest that the student has conducted the work as indicated above and that any required review and approval by institutional regulatory board (IRB/IACUC/IBC) has been obtained. Copies are attached if applicable.
I further acknowledge that the student will be presenting this work publicly in competition and I have communicated with the student research regarding any requirements for my review and/or restrictions of what is publicized.

Hussein Kaddour	Dr.
Supervising Adult's Printed Name / Signature	Title
Stony Brook University	11/02/19
Institution	Date Signed (must be after experimentation) (mm/dd/yy)
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