

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) Elizabeth Korn

Title of Project Gel and Electric Field-Based Desorption of DNA from PMMA-Coated Silicon Surfaces to Optimize Sequencing Accuracy

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? ☐ Yes ☒ No
- 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.

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

The student was informed of general research activities within our group and some current topics of interest relating to the research (through a lecture presentation). In discussions with the student, several unsolved problems (on ideas for making DNA sequencing more accurate and efficient) were presented and the student was asked to consider possible directions of research to pursue.

b. designed the methodology for his/her research project

The student decided to address the issue of desorption of DNA molecules from surfaces and was given the criteria for successful completion of the research. The student was responsible for design and implementation of specific protocols to achieve the goal of desorption of surface-adsorbed DNAs. The student planned and carried out experiments to optimize the desorption efficiency.

c. analyzed and interpreted data

The student performed fluorescence microscopy to characterize the effectiveness of changing various parameters (such as temperature, electric field strength, time of application of field) on the amount of DNA desorbed. The student did image analysis and statistical analysis of the resulting desorption data to evaluate the influence of these parameters.

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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.

The student, after receiving general instruction about instrumentation and sample preparation from staff members of the laboratory, was able to perform all experiments and characterization independently. This included preparation of DNA solutions, deposition of DNA on different substrates which she prepared, imaging of DNAs on the surfaces and the desorption of the DNAs from the surfaces produced by the various treatments. The student modified and adjusted the treatments as data on the efficiency was evaluated. For example, under some conditions, the student observed excessive (and detrimental) heat generation in the buffer solution due to the currents generated by the applied electric field and needed to find conditions which would minimize the effect while still causing adequate removal of the DNA.

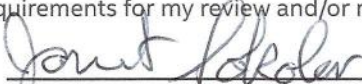
5. Did the student(s) work on the project as part of a group? ☐ Yes ☒ No
If yes, how many individuals were in the group and who were they (e.g. high school students, graduate students, faculty, professional researchers)?

The student organized and performed the experiments independently. The lab group working on other DNA projects (six other high school students) shared equipment and supplies with teach other and results were discussed among the students and with me.

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.

Jonathan Sokolov

Supervising Adult's Printed Name



Signature

Prof. of Materials Science

Title

Stony Brook University

Institution

8/29/2019

Date Signed (must be after experimentation) (mm/dd/yy)

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