**English for Medicine: Developing Academic Literacies**

**Grant Funding Application**

**Activity: Week 1**

Read the abstract below from an NIH funding application entitled ‘Development of a Novel Inhibitor of Ricin: A Potential Therapeutic Lead against Deadly Shiga and Related Toxins’ by Dr Artem Domashevskiy. This received an *Academic Research Enhancement Award* from the NIH.

Complete the following table of words and phrases that indicate the answers to the following questions. How many of these expressions would be useful to you, in your own research application?

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| Questions | Language highlighting the answers to the question | *Useful to you?*  (√) |
| Why is your research important? |  |  |
| What is the ‘research gap’ |  |  |
| What are your specific and long-term goals? |  |  |
| What is your rationale for the research? |  |  |
| What is your central hypothesis? |  |  |
| In what way is your proposal innovative? |  |  |
| What are your expected outcomes and benefits? |  |  |

**Abstract**

The PI proposes a high-impact collaborative research project to develop new inhibitors for ribosome inactivating proteins (RIPs), such as ricin and Shiga toxin. Ricin toxin, produced by the castor bean plant, has a nefarious past. Ricin is a well-known homicidal poison and has been used in several bioterrorist attacks. Shiga toxin is a deadly product of enterobacterial Escherichia coli. RIPs are RNA N-glycosidases that enzymatically remove specific purine residues from the universally conserved sarcin/ricin loop (S/R loop) of large ribosomal RNA, causing cellular death. There are no effective pharmaceuticals for either ricin or Shiga toxin poisoning. The PI proposes using a viral protein (VPg) from turnip mosaic virus that we have shown to inhibit ricin activity *in vitro*. The goals of this proposal are: 1) Establish conditions for VPg-ricin complex formation and the rates of VPg-ricin interactions; 2) Determine minimum VPg peptide that effectively inhibits ricin and Shiga toxins; and 3) Optimize conditions to enhance inhibition of these toxic proteins. This is an innovative activity. Based on the structural and mechanistic similarities of these toxins and previously acquired data showing that VPg peptides inhibit ricin activity *in vitro*, we believe the outcomes of this activity will provide leads for the synthesis of therapeutic peptides. In turn, this will serve as a catalyst for the development of constructively applied solutions for the inhibition of these deadly toxins. Furthermore, this proposal will enhance the infrastructure of research and education at John Jay College, introducing biochemical and biomedical research experiences to underrepresented minority and female students, who would otherwise lack such opportunities. This would allow them to experience a broad spectrum of techniques, and acquire skills such as data analysis used in modern scientific investigations, while developing a vast network of partnerships among scientists from national and international institutions.