



6-week course comprised of:

- Daily seminars delivered by world-leading experts in the areas of immunobiology and microbes, vision and vascular medicine and respiratory medicine.
- Generating networks and links with students from all around the world, working in groups on various projects and presenting by the end of the program.
- Enhancing our presentation skills, scientific writing, critical thinking and teamwork spirit.

Pharmacology of cardiovascular system

Our Trusty Old Medications

- Anti-hypertensives → CCB & ACE-Inhibitors
- Anti-anginals → Nitrates & B-blockers
- Antiarrhythmics → CCB & Na/ K-blockers

Novel Therapeutic Approaches

Anti-hypertensive - <i>Firibastat</i>	Anti-arryhtmic - <i>Combination of minimally invasive epicardial ablation with endocardial catheter ablation</i>	Genetic treatment of cardiac myopathy - <i>Mavacamten</i>
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- Obstacles and Limitations
- Translating basic research into clinical reality
- Pharmaceutical commitment
- Translational errors

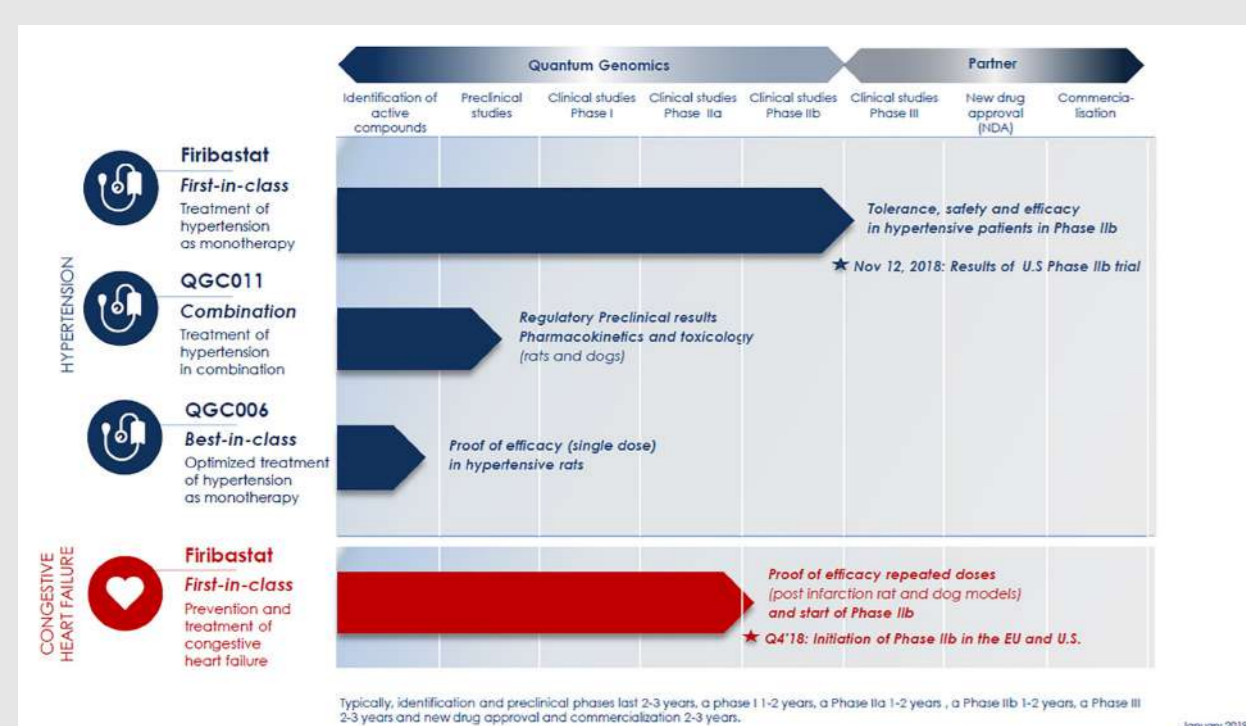


Figure 1. Firibastat clinical efficacy

Multiple Sclerosis

OBJECTIVE: IDENTIFY NOVEL THERAPEUTIC TARGETS FOR MULTIPLE SCLEROSIS, AN INCURABLE IMMUNE-MEDIATED DISEASE.

METHODS:

Researched techniques, image analysis, creating scientific programs

Used platforms such as ImageJ and GraphPad to collect and graph data (mixed brain cell culture)

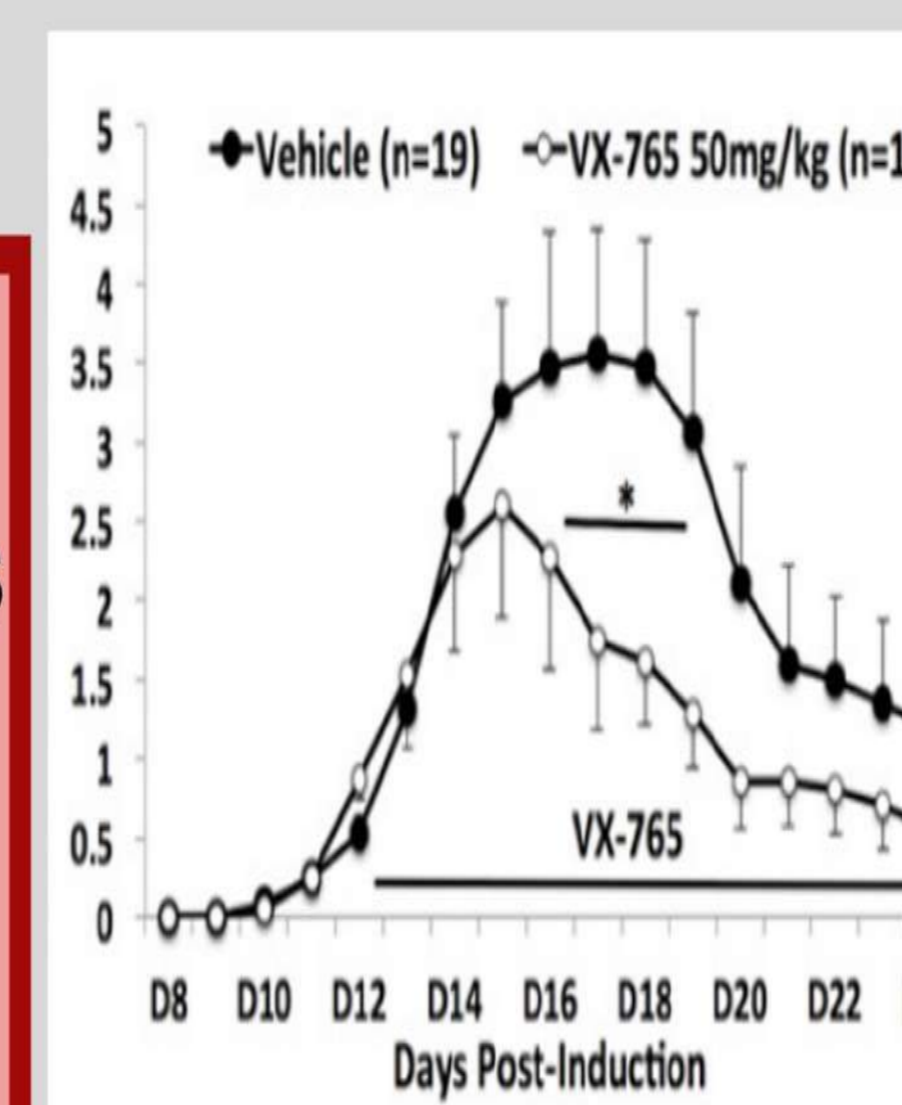
Data Interpretation: Mini Review and Journal Club



RESULTS:

Discovery of inflammasome activation and pyroptosis in ODCs during demyelination, driving pathogenesis

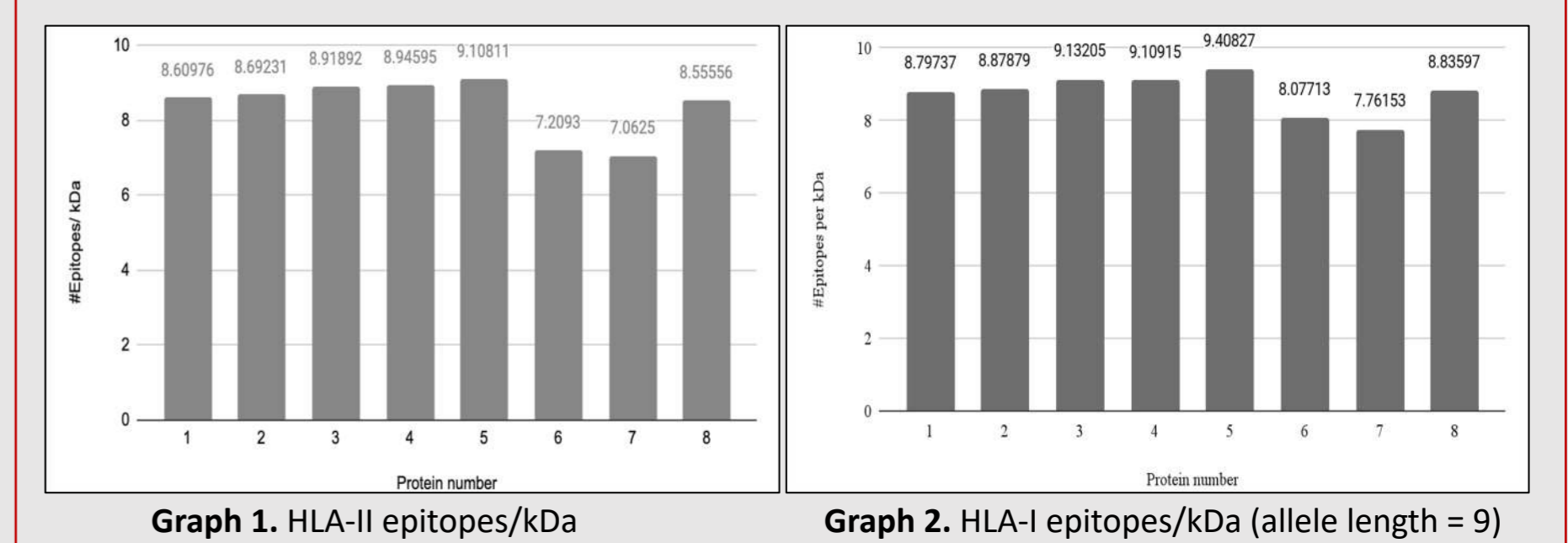
Potential therapeutic impact of caspase-1 inhibitor VX-765



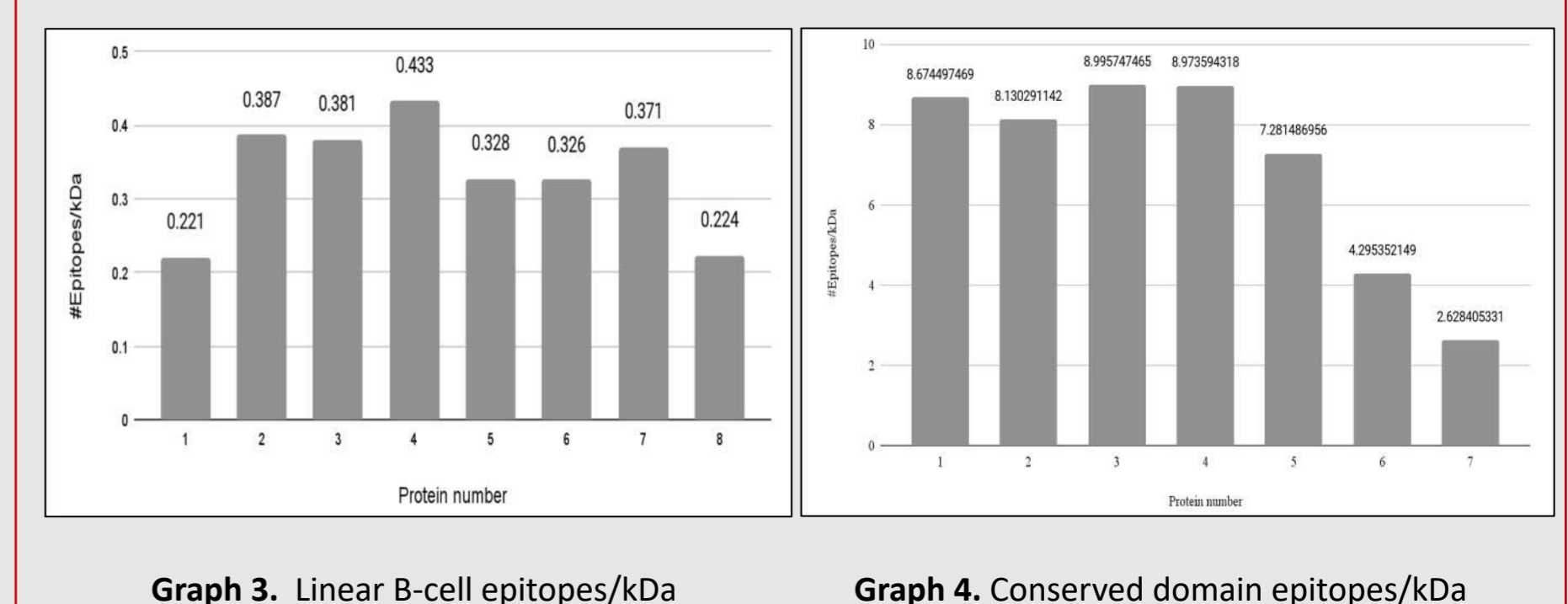
VX-765 lowered neurobehavioural severity score

Potential protein candidates for Pseudomonas aeruginosa vaccine development

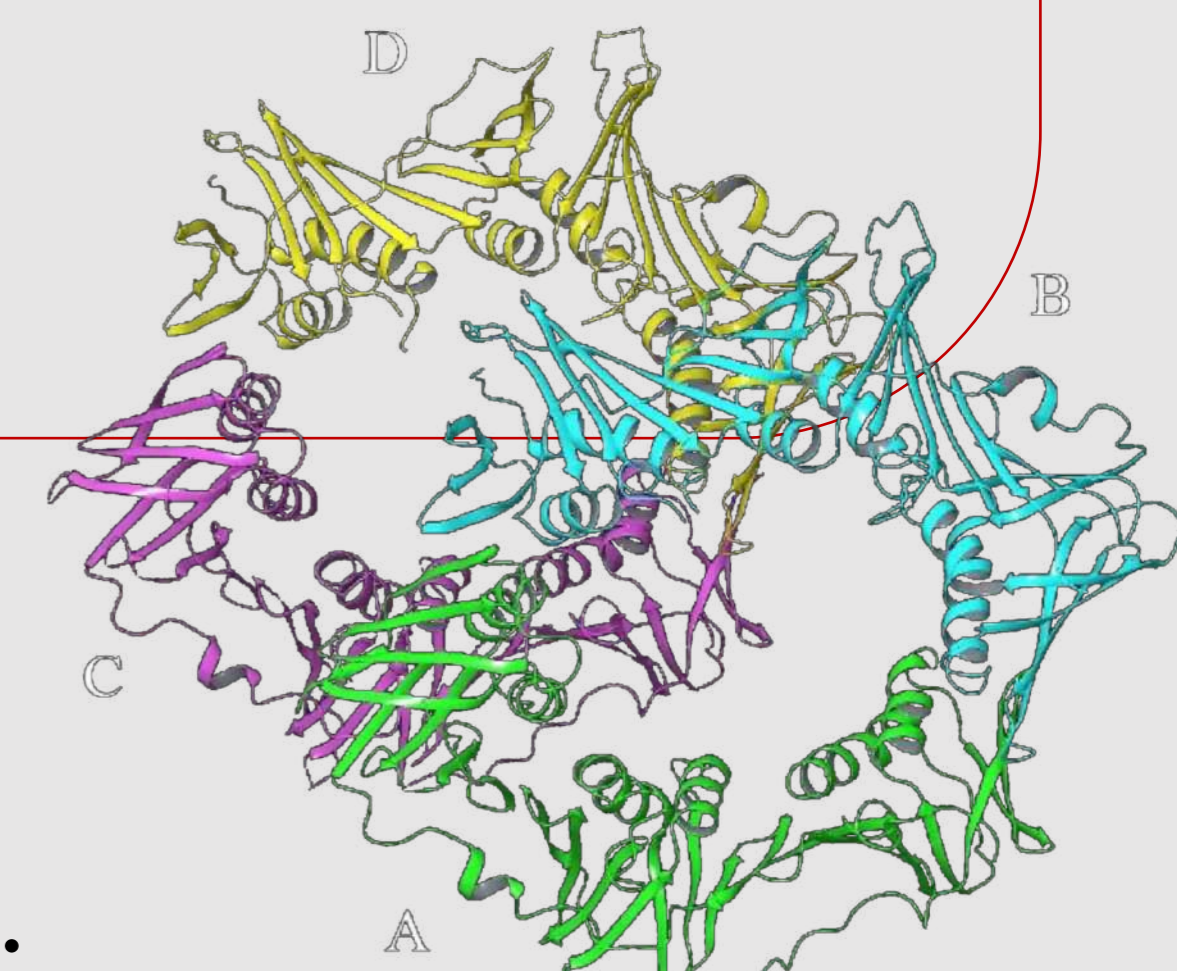
- PA01 Open Reading Frame
- in vivo + ex vivo methods + excluding patented proteins
- Analyze 9 protein candidates through reverse vaccinology
- Find potential T cell epitopes



- Find potential B cell epitopes
- Analyze epitopes in conserved domains



- Protein 5 most immunogenic with the highest amount of T and B cell epitopes/kDa



Experiences:

- Seminars aided our understanding of a vast majority of interesting broad topics in a summarized fashion.
- Career development roundtables which helped us connect with students who have had similar past experiences.
- Social Fridays helped us connect, communicate and cooperate with students from diverse backgrounds.
- Weekly research meetings taught us about the basis and the ethics of new innovative technologies and techniques while concurrently helping us develop new interests.