Contributions to Science:
Aim 1: Discovery of a new type of vectorial carbonic anhydrase:
References

Desmarais, John J et al. "DABs are inorganic carbon pumps found throughout prokaryotic phyla". en. In: *Nat Microbiol* 4.12 (Dec. 2019), pp. 2204–2215. ISSN: 2058-5276. DOI: 10.1038/s41564-019-0520-8. URL: http://dx.doi.org/10.1038/s41564-019-0520-8.

Aim 2: Charecterization of potential evolutionary paths for developing carbon dioxide concentrating mechanisms:
References

Flamholz, Avi I et al. "Trajectories for the evolution of bacterial CO_2-concentrating mechanisms". In: *Proceedings of the National Academy of Sciences* 119.49 (2022), e2210539119. DOI: 10.1073/pnas.2210539119. eprint: https://www.pnas.org/doi/pdf/10.1073/pnas.2210539119. URL: https://www.pnas.org/doi/abs/10.1073/pnas.2210539119.

Aim 3: Development of nuclease chain reaction signal amplification for viral diagnostics:
References

Liu, Tina Y et al. "Accelerated RNA detection using tandem CRISPR nucleases". en. In: *Nat. Chem. Biol.* (Aug. 2021), pp. 1–7. ISSN: 1552-4450. DOI: 10.1101/2021.03.19.21253328. URL: https://www.nature.com/articles/s41589-021-00842-2.

Aim 4: Application of general epistasis techniques to protein design:
Aim 5: Discovery of CasX:
References

Liu, Jun-Jie et al. "CasX enzymes comprise a distinct family of RNA-guided genome editors (vol 566, pg 218, 2019)". In: *Nature* 568.7752 (2019), E8–E10. ISSN: 0028-0836.