Structural Studies on carbonic anhydrases: a crystal story from Jordan

A. Abuhammad[1]

[1]School of Pharmacy, University of Jordan, **a.abuhammad@ju.edu.jo**

There are sixteen human carbonic anhydrase (CA) isozymes that display varieties in their tissue distribution, and catalytic activities. These enzymes are involved in many essential physiological processes related to respiration, homeostasis, cell proliferation and bone resorption and calcification. The diversity of CAs functions in the body made them attractive drug targets for many diseases such as glaucoma, epilepsy, osteoporosis, and obesity.
However, selectivity of CA inhibitors is considered a major obstacle towards targeting these enzymes. None of the available CAIs selectively inhibits a particular CA isoform. Therefore, structure-based drug design is considered a method of choice for the design of selective and potent CA inhibitors.
Protein crystallography is the most important component of this process. Structural information obtained from the crystals is pivotal in accelerating the identification and optimization of novel drug molecules. As the case in many developing countries, protein crystallography research never existed in Jordan. I will give a brief summary of the establishment of the first protein crystallography laboratory in Jordan and the progress of the CAs project. Transferring this cutting-edge technology to Jordan will have an impact on extending a new opportunity for young students in the developing countries.