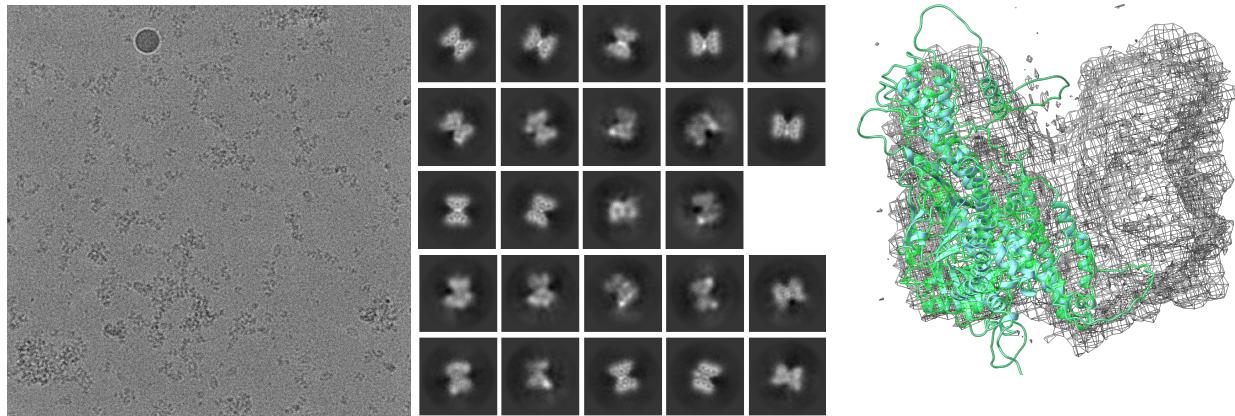


## Spatiotemporal control of MICAL1

Mario A. Bianchet, Ph.D. NCCAT TP1 (Embedded cross-Training) Common Application



**Figure. (a)** Cryo-EM Microphotography of vitrified mouse MICAL-1 (0.5 mg/ml). **(b)** 2D-classes showed a two lobes structure dimer. **(c)** A preliminary low-resolution map of the MICAL1 particle is shown. One of the two lobes observed was fitted with the alpha-fold homology model of mMICAL-1 showed a good correspondence between the predicted shape of the enzyme monomer in one of the lobes and suggesting a dimer.

## REFERENCES

- Hung, R.J., Yazdani, U., Yoon, J., Wu, H., Yang, T., Gupta, N., Huang, Z., van Berkel, W.J. & Terman, J.R. Mical links semaphorins to F-actin disassembly. *Nature* **463**, 823-827 (2010).
- Konstantinidis, K., Bezzerides, V.J., Lai, L., Isbell, H.M., Wei, A.C., Wu, Y., Viswanathan, M.C., Blum, I.D., Granger, J.M., Heims-Waldron, D., Zhang, D., Luczak, E.D., Murphy, K.R., Lu, F., Gratz, D.H., Manta, B., Wang, Q., Wang, Q., Kolodkin, A.L., Gladyshev, V.N., Hund, T.J., Pu, W.T., Wu, M.N., Cammarato, A., **Bianchet, M.A.**, Shea, M.A., Levine, R.L. & Anderson, M.E. MICAL1 constrains cardiac stress responses and protects against disease by oxidizing CaMKII. *The Journal of clinical investigation* **130**, 4663-4678 (2020).
- Nadella, M., **Bianchet, M.A.**, Gabelli, S.B., Barrila, J. & Amzel, L.M. Structure and activity of the axon guidance protein MICAL. *Proc Natl Acad Sci U S A* **102**, 16830-16835 (2005).
- Siebold, C., Berrow, N., Walter, T.S., Harlos, K., Owens, R.J., Stuart, D.I., Terman, J.R., Kolodkin, A.L., Pasterkamp, R.J. & Jones, E.Y. High-resolution structure of the catalytic region of MICAL (molecule interacting with CasL), a multidomain flavoenzyme-signaling molecule. *Proc Natl Acad Sci U S A* **102**, 16836-16841 (2005).
- Alqassim, S.S., Urquiza, M., Borgnia, E., Nagib, M., Amzel, L.M. & **Bianchet, M.A.** Modulation of MICAL Monooxygenase Activity by its Calponin Homology Domain: Structural and Mechanistic Insights. *Scientific reports* **6**, 22176 (2016).
- Rai, A., Oprisko, A., Campos, J., Fu, Y., Friese, T., Itzen, A., Goody, R.S., Gazdag, E.M. & Muller, M.P. bMERB domains are bivalent Rab8 family effectors evolved by gene duplication. *eLife* **5** (2016).