Biomacromolecular Structure and Assembly: Animal, Vegetable, and Fungal Tales

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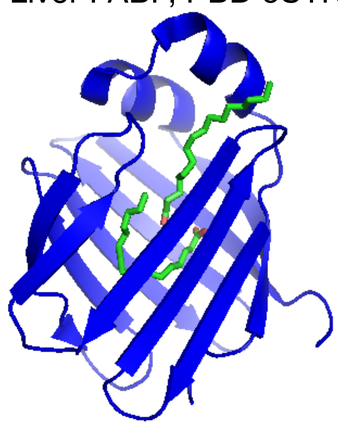
How do fatty acid-binding proteins modulate appetite and pain?

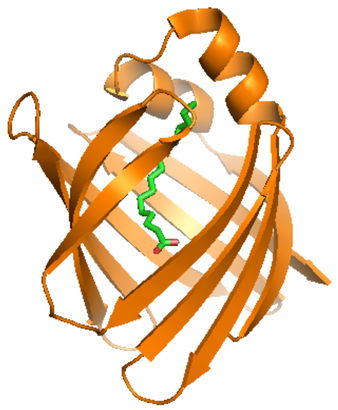
Liver FABP, PBD 3STK



K_d(Oleate) = 7.7 μM

K_d(Arachidonylethanolamine) = 239.7 μM

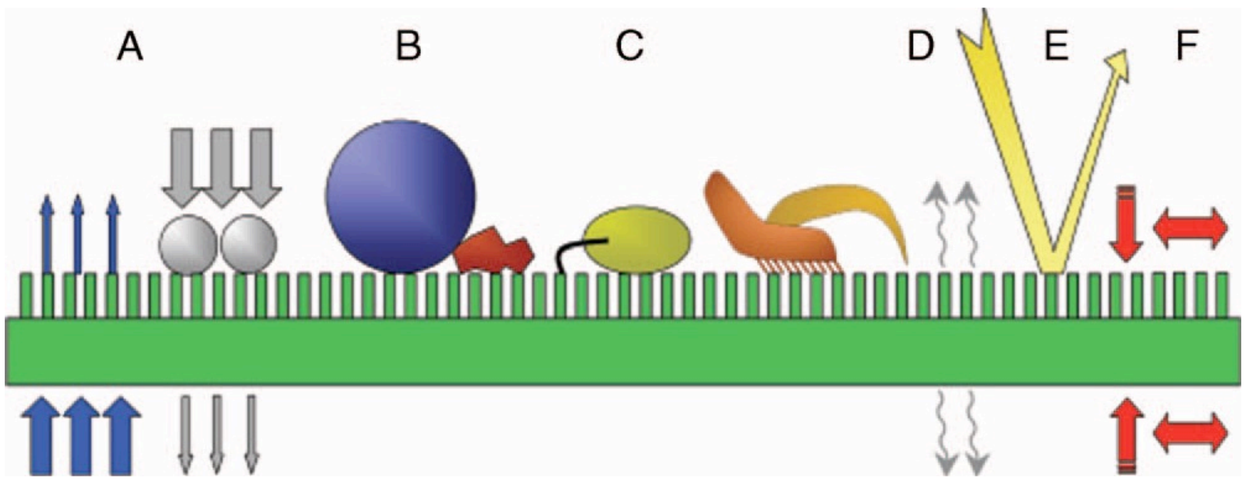
Intestinal FABP, PBD 2IFB



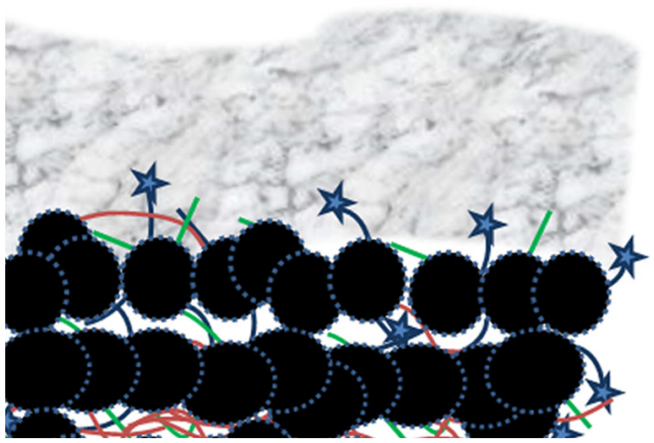
K_d(Oleate) = 0.9 μM

K_d(Arachidonylethanolamine) = 23.0 μM

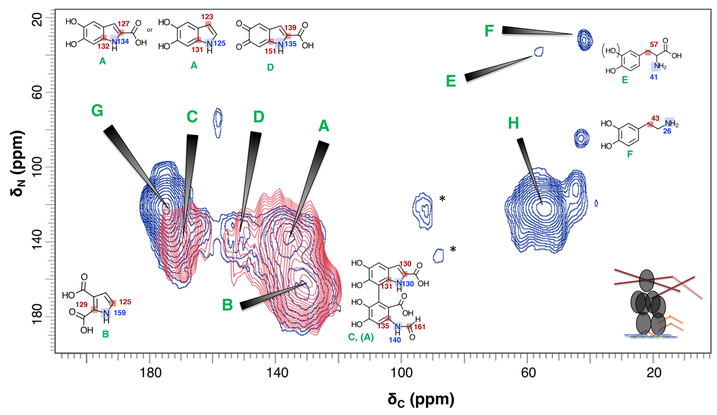
How do plants form barriers to biotic and abiotic environmental challenges?

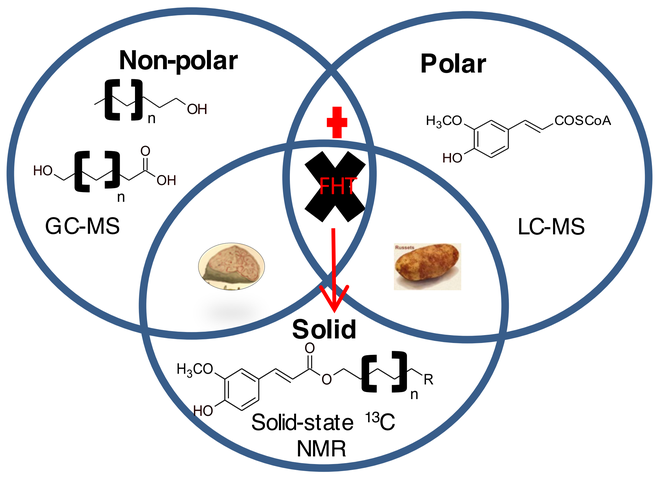


How do melanin pigments protect fungal cells?



How can (solid- and solution-state) NMR, MS, AFM, and multivariate statistics address these questions?





Selected Recent Publications

1. Q. Wang,* S. Rizk,* C. Bernard, D. Kam, J. Storch, and **R. E. Stark**, "Protocols and Pitfalls in Obtaining Fatty Acid-Binding Proteins for Biophysical Studies of Ligand-Protein and Protein-Protein Interactions," *Biochem. Biophys. Rep.,* **10**, 318-324 (2017).
2. E. Camacho, C. Chrissian, R. J. B. Cordero, L. Liporagi-Lopes, **R. E. Stark**, and A. Casadevall, "*N*-acetylglucosamine supplementation affects *Cryptococcus neoformans* cell wall composition and melanin architecture," *Microbiology,* **163**, 1540-1556 (2018).
3. L. Q. Jin,* Q. Cai,* W. Huang, K. Dastmalchi, J. Rigau, M. Molinas, M. Figueras, O. Serra, and **R. E. Stark**, "Potato native and wound periderms are differently affected by down-regulation of FHT, a Potato Feruloyl Transferase," *Phytochemistry,* **147**, 30-48 (2018).
4. G. Tedeschi, J. J. Benitez, L. Ceseracciu, K. Dastmalchi, B. Itin, **R. E. Stark**, Antonio Heredia, A. Athanassiou and J. A. Heredia-Guerrero, "Sustainable fabrication of plant cuticle-like packaging films from tomato pomace agro-waste, beeswax, and alginate," *ACS Sust. Chem. Eng.*, **6,** 14955–14966 (2018).
5. S. *Chatterjee, R. Prados-Rosales, S. Tan, V. C. Phan, C. Chrissian, B. Itin, A. Khajo, R. S. Magliozzo, A. Casadevall, and* ***R. E. Stark****,* "The melanization road more traveled by: precursor substrate effects on melanin synthesis in cell-free and fungal cell systems," J. *Biol. Chem.,* **293**, 20157-20168 (2018).
6. K. Dastmalchi,* M. P. Rodriguez,* J. Lin, B. Yoo, and **R. E. Stark**, "Temporal resistance of potato tubers: Antibacterial assays and metabolite profiling of wound-healing tissue extracts from contrasting cultivars," *Phytochemistry,* **159**, 75-89 (2019).
7. E. Camacho, R. Vij, C. Chrissian, R. Prados-Rosales, D. Gil, R. O'Meally, R.J.B. Cordero, R.N. Cole, M. McCaffrey, **R. E. Stark**, A. Casadevall, "The structural unit of melanin in the cell wall of the fungal pathogen *Cryptococcus neoformans*," *J. Biol. Chem.*, **294** 10471-10489 (2019). *JBC RECOMMENDED READ*.
8. C. Chrissian, E. Camacho, M.S. Fu, R. Prados-Rosales, S. Chatterjee, R. J. B. Cordero, J. K. Lodge, A. Casadevall, and **R. E. Stark**,* "Melanin deposition in two *Cryptococcus* species depends on cell-wall composition and flexibility," *J. Biol. Chem.,* **295**, 1815-1828 (2020).
9. M. P. Lai, F. Katz,* C. Bernard, J. Storch, and **R. E. Stark**,* "Two fatty acid-binding proteins expressed in the intestine interact differently with endocannabinoids," *Prot. Sci.*, **29,** 1606-1617 (2020).

(Ph.D. student co-authors are underlined.)

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7R01-AI052733-12
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W911SR20C0034

Collaborators

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