Proteins, like people, act differently when crowded together

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People in a jetliner act and feel one way when crammed together like sardines in a can. But they have quite a different mindset when the middle seat is empty and they have more personal space. Scientists are pursuing a remarkable parallel that exists among the proteins involved in health and disease inside living cells. The cover story in the current issue of Chemical & Engineering News (C&EN), ACS' weekly newsmagazine, focuses on how the study of proteins crowded together inside cells is opening new doors to the prevention, diagnosis, and treatment of disease.

C&EN Senior Editor Celia Henry Arnaud notes that much of the scientific knowledge about proteins comes from research done in watered-down solutions, as if they had much of an airplane or cell to themselves. But cells are packed with proteins, which fill about 30 percent of a cell's volume. In order to understand proteins' actual role, scientists must study proteins under these jam-packed conditions.

The article describes how scientists are forging ahead with research that mimics the real-world conditions under which proteins function in cells. One discovery, for example, indicates that under crowded conditions, a protein involved in Lyme disease changes shape in a way that reveals a potential new target for diagnosing and treating the disease.

More information: "Close Quarters" This story is available at pubs.acs.org/cen/coverstory/88/8848cover.html