Most complete beer 'proteome' finding could lead to engineered brews

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In an advance that may give brewers powerful new ability to engineer the flavor and aroma of beer — the world's favorite alcoholic beverage — scientists are publishing the most comprehensive deciphering of the beer's "proteome" ever reported. Their report on the proteome (the set of proteins that make beer "beer") appears in ACS' *Journal of Proteome Research*.

Pier Giorgio Righetti and colleagues say they were inspired to do the research by a popular Belgian story, Les Maîtres de l'Orge (The Brew Masters), which chronicles the fortunes of a family of brewers over 150 years. They realized that beer ranks behind only water and tea as the world's most popular beverage, and yet little research had been done to identify the full set of proteins that make up beer. Those proteins, they note, play a key role in the formation, texture, and stability of the foamy "head" that drinkers value so highly. Nevertheless, scientists had identified only a dozen beer proteins, including seven from the barley used to make beer and two from yeast.

They identified 20 barley proteins, 40 proteins from yeast, and two proteins from corn, representing the largest-ever portrait of the beer proteome. "These findings might help brewers in devising fermentation processes in which the release of yeast proteins could be minimized, if such components could alter the flavor of beer, or maximized in case of species improving beer's aroma," the report notes.

More information: "Les Maîtres de l'Orge: the Proteome Content of

Your Beer Mug", *Journal of Proteome Research*.

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