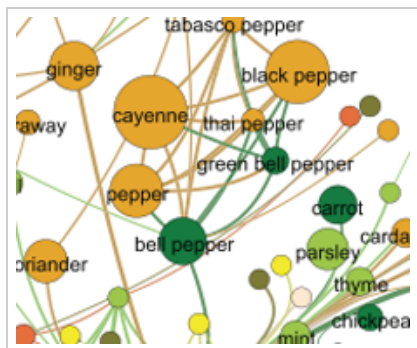


Adding the flavor to food science



Northeastern University network scientists debunked the food-pairing hypothesis, which is based on the principle that foods sharing flavor compounds taste better together.

December 16, 2011

North American and Western European cuisines tend to use ingredients that share flavor compounds, while East Asian and Southern European cuisines tend to avoid ingredients that share flavor compounds, according to a study by Northeastern University network scientists.

The findings — which were reported in the December edition of the online journal *Scientific Reports* — appear to debunk the food-pairing hypothesis, which is based on the principle that foods that share flavor compounds taste better together.

“Some scientists in the molecular gastronomy community think foods with similar compositions taste well together, but we found

that it really depends on the region,” said coauthor Albert-László Barabási, a Distinguished Professor of **Physics** with joint appointments in **biology** and the **College of Computer and Information Science**.

Barabási — who recently received an honorary doctorate from the Technical University of Madrid for his contributions to the fields of science and engineering — is the founding director of Northeastern’s world-renowned **Center for Complex Network Research (CCNR)**.

The team of researchers, including former CCNR postdoctoral research associates James Bagrow, Sebastian Ahnert and Yong-Yeol Ahn, took a network-based approach to explore the impact of flavor compounds on ingredient combinations. They designed and analyzed the bipartite network of links between ingredients and flavor compounds found in more than 56,000 recipes from three online repositories, including epicurious.com, allrecipes.com and menupan.com.

Two ingredients were connected if they shared at least one flavor compound. On average, a pair of ingredients in North American cuisine shared 11.7 flavor compounds. By contrast, a pair of ingredients in East Asian cuisine shared an average of 6.2 flavor compounds.

Compared to a randomized recipe dataset, North American dishes tended to use ingredients with more shared compounds than expected by chance, while East Asia dishes tended to use ingredients with fewer than shared compounds than expected.

The researchers found that a small number of ingredients contributed to the food pairing effect in each region. Some 13 ingredients in North American cuisine, including milk, eggs and butter, appeared in roughly 74 percent of all recipes.

“These ingredients played a disproportionate role in the cuisine and contributed to the shared compound effect,” Barabási explained.

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What's his favorite food? "I like Hungarian ethnic food, but I won't reject a good steak or a good burger," Barabási quipped.

View selected publications of Albert-László Barabási in IRis, Northeastern's **digital archive**.

For more information, please contact Jason Kornwitz at 617-373-5729 or at j.kornwitz@neu.edu.

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