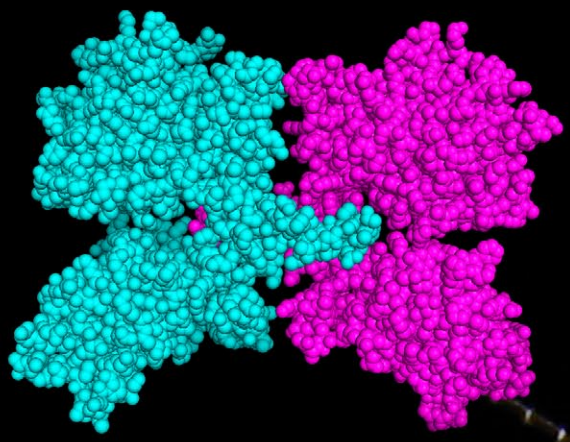
When Katy met Rob

Students' findings could inhibit tumors

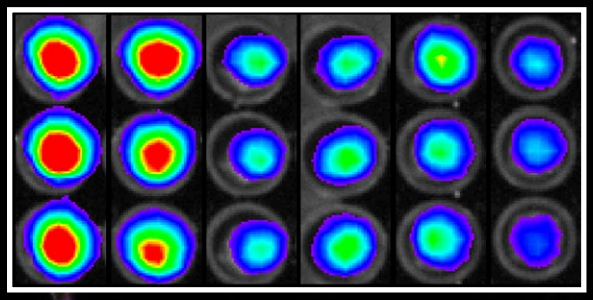
DIMERIZATION

Two large protein molecules called EGF receptors join together. One receptor extends its "arm" toward a target site called the "armpit." The merged structure is called a dimer; the process, dimerization.



DIMERIZED

While studying for their doctoral degrees, Robert Y.C. Yang, PhD, and Katherine S. Yang, PhD, investigated protein coupling that leads to tumor formation. The researchers later married.



Luciferase makes fireflies glow. Katy split luciferase in two parts and attached the parts to EGF receptors. When the receptors bind, or dimerize, the divided luciferase becomes whole again, causing a glow. When many bind, the glow is bright. But when Rob's inhibitors block binding, the glow is dimmer, at right.

Working together and with their mentors, Katy's and Rob's findings point toward a potential new anticancer therapy:

Searching for dimerization inhibitors that could also control tumors, Rob narrows the scope of the daunting task from impossible to manageable while training with Garland R. Marshall, PhD:

1,000,000s Potential therapeutic molecules

2,000 Promising molecules combed from a National Cancer Institute database

80 The most promising molecules, rated by degree of fit to the "armpit"

20 Survivors of a preliminary analysis

Katy, after refining a method for measuring dimerization based upon the mechanism of firefly light, next tests Rob's 20 top molecules while studying with Linda J. Pike, PhD. The result:

1 Compound is found to hinder dimerization, and thus could limit tumor growth

Firefly in flight
www.frfly.com

OUTLOOK MAGAZINE • WASHINGTON UNIVERSITY SCHOOL OF MEDICINE • INFORMATION GRAPHIC: ERIC YOUNG • SCIENCE DATA: ROBERT Y.C. YANG, PHD, AND KATHERINE S. YANG, PHD