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Mining data for the history of pharmaceutical development

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(Medical Xpress)—Yale's Michael Kinch spent his spare time in the last year creating a massive database that encompasses the entire history of drug development in the United States. In a series of 20 articles scheduled to be published over the next year in the journal Drug Discovery Today, Kinch mines the data and provides historical tidbits

about the history of drug development and reveals trends on how—or whether—we will get new medicines in the future.

"The hope is that this data—such as when and what drugs were approved, what happened to companies that developed them, who did the clinical trials—will convey insight into trends that today are reshaping the biopharmaceutical industry," said Kinch, managing director of the Yale Center for Molecular Discovery at West Campus.

Kinch starts with an overview of the history of pharmaceutical introduction to the U.S. marketplace, beginning in 1827 when morphine was introduced by the German company Merck. Aspirin, which made its debut in 1899, was the perhaps the first blockbuster drug, notes Kinch. The heart of the series, however, centers on the analyses of 1453 new drugs granted approval since the passage of the Food and Drug Act of 1906.

For instance, the second paper in the series, published online April 17, shows that the contributions of biotechnology companies to new drug development has been declining since 2000 and is at a level not seen since the early 1980s. Pharmaceutical companies now swallow up biotechnology organizations even before a company gains its first FDA approval, the analyses shows.

Future papers examine other trends. For instance, the rates of approvals for drugs that combat HIV are declining at a rate that mimics the decline of approvals for new antibiotics 20 years ago. That deficit left the medical industry ill-prepared to deal with the rise of antibiotic-resistant bacteria and so may suggest the emergence of future problems with drug-resistant HIV, contends Kinch.

"An unexpected insight from this endeavor is that we might be able to actively prevent future problems by learning from the past," Kinch said.

More information: Michael S. Kinch, Austin Haynesworth, Sarah L. Kinch, Denton Hoyer, "An overview of FDA-approved new molecular entities: 1827–2013," Drug Discovery Today, Available online 26 March 2014, ISSN 1359-6446, dx.doi.org/10.1016/j.drudis.2014.03.018.

Michael S. Kinch, "The rise (and decline?) of biotechnology," Drug Discovery Today, Available online 18 April 2014, ISSN 1359-6446, dx.doi.org/10.1016/j.drudis.2014.04.006.

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