



RESEARCH2REALITY

Shining a light on research & innovation.

Approaching the Summit of Chemical Synthesis

An interview with **Mark Lautens**, Chemist
University of Toronto

Nature provides us with an amazing diversity of compounds. As chemists, you can tweak molecules and learn how different structure changes function. So that's something that nature isn't good at doing, and we really are very good at doing.

When you see a molecule that needs to be made for a drug, or an agrochemical, or even some space-age material, you have to think, "How am I going to make that and see if it has the properties that I think it has?"
Cholesterol-lowering agents, anti-depressants, anti-cancer agents.

What is your lab focusing on right now?

What we're trying to do is to combine chemical reactions, to put many reactions and string them together one after the other. And the idea is, can we make chemical catalysis, that is with the kinds of reactions that we discover, can we combine them and string them together? Sometimes this is called domino catalysis. We hope to improve efficiency, and some people would call this green chemistry: how to make things greener by producing less waste and less energy use.

What's the future promise of your research?

You can make almost anything now. Very labour-intensive, very energy-intensive, and with lots of waste. The message has been coming through loud

TODAY'S RESEARCH. TOMORROW'S REALITY.



and clear for 20 years or so that we have to do better. We have to protect the environment more, and we also have to get our hands on molecules more quickly.

Sometimes people think of organic synthesis like climbing a mountain. The first time you climb it, it's probably not going to be the best way to climb it; it's just a way to climb it. Our job is to show you the fastest and the best way to get to the top.