



The Advanced Foods and Materials Network (AFMNet) is Canada's national food and bio-materials research network. We bring together natural scientists, engineers, health researchers and social scientists to come up with new ideas and to develop new technologies and products that benefit Canadians. Then, we get these technologies and products out of the lab, to you!

AFMNet research focuses on:

- maintaining and promoting health.
- ensuring the quality of food.
- ensuring public confidence in the food supply.
- developing new bio-materials.
- investigating issues related to the ethical, public policy, legal/regulatory and safety implications of new food technologies and products.



A Closer Look



Louise Nelson:
controlling post-harvest
disease
in apples

Improving the Quality of Canada's Apples

One of the major challenges for the Canadian apple industry is post-harvest decay, which can account for losses of 5%–10% of the \$200 million total annual revenue. There is also growing demand by the public for environmentally friendly alternatives to synthetic fungicides that are safe and meet the needs of organic growers and regulators.

AFMNet researchers Louise Nelson from the University of British Columbia, Okanagan and Peter Sholberg from the Pacific Agri-Food Research Centre have developed two novel approaches to detect and control post-harvest disease in apples. One is a rapid DNA-based macroarray system for detection of fungal pathogens responsible for post-harvest rot. The second is the identification of soil bacteria, which can control fungal pests and are safe for humans and the environment. AFMNet funding is helping to develop and test the macroarrays and bacterial control products in real-world conditions in orchards and packing houses, and to assess their potential for commercial development. Working in partnership with growers, government researchers, industry and regulators, this research will ensure the development of safe and sustainable products to enhance the quality and safety of fruit and improve Canada's competitive ability in global markets.

at Three AFMNet Projects

Making Food Healthier

It is estimated that 3,000 Canadians die annually from high consumption of trans fats, the most harmful of all fats. The evidence is overwhelming — there is a much greater risk of heart disease from an increase in dietary trans fats than from increases in dietary saturated fats. Trans fats not only increase the blood levels of LDL, or bad cholesterol, but also decrease blood levels of HDL, or good cholesterol. Both effects are associated with increased coronary heart disease and diabetes.

With these alarming numbers in mind, AFMNet researchers Alejandro Marangoni from the University of Guelph and Stefan Idziak from the University of Waterloo have developed a heart-healthy alternative to artery-clogging trans fats. Mixing



Alejandro Marangoni: developing healthier alternatives

vegetable oil, water, mono-glycerides and fatty acids together, they have formed

a gel that has the same structural and functional properties as trans fats — without the trans fat. Also impressive is that this process is 'oil independent,' meaning our researchers can use

much healthier oils — such as canola and soybean — that are low in saturated fats, unlike the palm and coconut oils used in other trans-fat replacement products.

Already a patented product called Coavel,[™] AFMNet funding is bridging the gap between research and product development, moving the technology forward to a point where it is now attracting additional partnerships and investment.

To learn more about our innovative research projects, call (519) 822-6253 to request a free copy of our award-winning *Advance* magazine. You can also check us out online at www.afmnet.ca.



Creating controlled-release gels for food, medicine and cosmetics

Developing Controlled-release Biopolymers

Biopolymers or "gels" — natural and synthetic materials such as plastic made up of repetitive molecular structures — have lots of promise for tissue regeneration, food preservation and antimicrobial agent delivery. But what's the best way to make them work? That's the challenge facing AFMNet researchers Dérick Rousseau at Ryerson University and Allan Paulson at Dalhousie University.

After developing a simple and inexpensive method of making the gels, Rousseau and Paulson are now tackling the problem of controlled release. It is the pores within the gels that hold the chemicals to be released, but when most gels are made, these pores are arranged randomly. As the gel dissolves, this randomness often means the chemicals aren't released uniformly — which is very problematic if the gel is holding medication that requires an even release. Together, our AFMNet researchers are working to develop a process to arrange the pores into an interconnected network that will release the chemicals more consistently.

There are many applications for these gels, including the controlled release of antimicrobial agents and novel delivery systems in the areas of food, medicine and cosmetics.



Réseau des aliments et des matériaux d'avant-garde
ADVANCED FOODS & MATERIALS NETWORK
Inspiration from the ground up | Aux racines de l'inspiration