

## الخطة البحثية لقسم الكيمياء الحيوية

The Department of Biochemistry offers a dynamic environment comprising a wide spectrum of basic and applied research interests. The department identifies chemical biology and the development of novel research tools, laboratory analysis and potentially therapeutic agents as important areas for future development.

It comprises the following research areas:

- **Dietary changes and disease**
- **Metabolic abnormalities and disease**
- **Mode of action of drugs**
- **Liver diseases**
- **Prevention and treatment of cancer**
- **Stem cells and tissue culture**

## **Dietary changes and disease**

Nutrition is coming to the fore as a major modifiable determinant of chronic disease, with scientific evidence increasingly supporting the view that alterations in diet can have strong effects, both positive and negative, on health throughout life. Dietary adjustments may not only influence present health, but may determine whether or not an individual will develop such diseases as cancer, cardiovascular disease and diabetes much later in life

The complexity of both the chemical composition of foods and the body's molecular and physiological response to diet creates discovery challenges such as: effect of caloric intake on different diseases, antioxidants and free radicals, relationship between diet and cancer, bioactive natural products and obesity.

## **Metabolic abnormalities & disease**

Studying relationship between sex hormones and osteoporosis, hormonal regulation of energy homeostasis, signal transduction pathways involved in cellular and whole body energetics, the mechanisms by which enzymes catalyze biochemical interconversions, biochemical and metabolic effects of hormones, hormonal abnormalities and disease, enzyme abnormalities and diseases and developing protective measures and adjuvant therapy

## **Mode of action of drugs**

Discovering new mechanisms of action of currently used drugs, studying adverse effects of drugs, studying the biological effects of newly synthesized chemicals and possible therapeutic use

## **Liver diseases**

Developing new therapeutic approaches for treatment or prevention of liver fibrosis, liver cirrhosis, primary hepatocellular carcinoma, studying mechanisms of peroxisome proliferator-induced liver cancer and liver toxicity

## **Prevention and treatment of cancer**

Studying the origin of cancer cells and the mechanisms by which these cells evade chemotherapy, mechanisms of peroxisome proliferator-induced liver cancer, biochemical changes induced by cancer promoters, investigating disease susceptibility and drug resistance, novel methods for early detection, the of enzymes involved in the defense against carcinogens, the metabolism of chemotherapeutic agents, the relationship between diet and cancer and developing new therapeutic approaches for killing cancer cells.

## **Stem cells and tissue culture**

Stem cells provide an ideal model to understand the development of organisms under healthy and disease conditions. It should help decrease the use of experimental animals. Stem cells research developing new families of drugs and new therapies, using stem cells to repair injured organs, to fix degenerative diseases, to build new tissues outside the body or to be grafted with the goal of moving these findings into clinical trials

الميزانية المطلوبة	المخرجات 2015	المخرجات 2014	المخرجات 2013	المخرجات 2012	المخرجات 2011	التوجهات البحثية للقسم
100,000	M.sC Ph.D.	Publication	Publication	M.sC	Publication	Dietary changes & diseases
80,000	M.sC Ph.D.	Publication	2 Publication		Ph.D 2 Publication	Metabolic abnormalities & diseases
20,000			Publication	Ph.D		Mode of action of drugs
100,000	Ph.D Publication M.sC	Publication	Publication	M.sC	M.sC Publication	Liver diseases
100,000	2 M.sC	Publication	Ph.D Publication M.sC	Ph.D Publication	Publication	Prevention & treatment of cancer
60,000	2 M.sC	Publication	Publication			Stem cells & tissue culture

