|  |
| --- |
| * **Tissue engineering**
	+ - * **Scaffolds designing**
			* Designing and evaluating the new scaffolds with tissue/organ de-cellularization
			* Designing and evaluating the new scaffolds with 3D printing method
			* Designing and evaluating the new scaffolds with freeze drying method
			* Designing and evaluating the new scaffolds with electrospinning method
* **Stem cell technology**
	+ - * **Stem cell based therapies**
			* Cell therapy for the treatment of chronic disease of liver, kidney, heart, bone fractures, cartilage problems and cancers
			* Using stem cells as cellular vehicles for delivering of drugs and genes
			* **Stem cell differentiation recipes and treatments**
* Evaluation the stem cell behavior under treatment with different drugs, biological molecules, etc.
* Investigating the new materials that induce or inhibit stem cell differentiation
* **Nano-biotechnology**
	+ - * **Nanoparticle drug delivery systems**
				+ Designing and evaluating self-assemble structures: micelles; peptosomes, polymersomes and biological vesicles
				+ Hybrid lipid-polymer nanoparticles
				+ Coordinated metal-based hybrid platforms
* Hydrogels
* Biomaterial synthesis including synthesis of amphiphilic copolymers, inorganic nanoparticles, metal organic frameworks, covalent organic frameworks, prodrugs, intelligent drug conjugates and inorganic and targeted nanoparticles
* Designing nanodrug delivery systems for wound healing and skin regeneration
* Designing engineered exosomes
* **Aptamer-based sensors**
* Electrochemical Aptasensors
* Optical Aptasensors
	+ - * **Therapeutic oligonucleotides**
			* Crisper technology
			* siRNA/MicroRNA, shRNA
			* Therapeutic aptamers
* **Immunotherapy**
	+ - **Immunomodulatory compounds**
* Searching for new natural or synthetic compounds with the ability to modulate macrophage or lymphocyte phenotypes
* Designing and evaluating of nanoparticles for improved immunotherapy
* **Cancer chemotherapy and hormone therapy**
	+ - **Tamoxifen (TAM) resistance in ER+ breast cancers**
* Investigating molecular mechanisms involved in TAM-resistance cells
* Examining new strategies to overcome TAM-resistance in breast cancers
	+ - **Multidrug resistance (MDR) in cancers**
* Exploring Gene expression regulation of MDR pumps
* Searching for new natural or synthetic compounds with the ability to reverse MDR phenotype in cancer cells
* **Fermentation**
	+ - **Production of active metabolite**
			* Optimization of production
			* Designing new system
		- **Probiotics**
* Searching microorganisms modifying microflora
 |