**Research description**

We are interested in translational research on viral infection as well as autoimmune and inflammatory diseases, especially focusing on influenza virus and rheumatoid arthritis (RA). We use different animal models and gene transfer approaches to investigate disease pathogenesis and identify new therapeutic targets and biomarkers.

We currently focus on the following three themes:

- **Roles of galectins, kallikrein, and kallistatin in influenza virus infection**

  ![Fig. 1. Galectin-1 protects mice against lethal influenza virus infection.](image)

  ![Fig. 2. TEM analysis reveals that galectin-1 can bind to influenza virus, but adenovirus.](image)

  ![Fig. 3. Conjugation of galectin-1 on the surface of gold nanoparticles (AuNP) enhances its binding affinity to influenza virus and antiviral activity.](image)

- **Cytokines, microRNA, synovial fibroblasts, T cells, and galectins in the pathogenesis of RA**

  ![Fig. 4. Collagen-induced arthritis rat model showing different degrees of hindpaw swelling, which can be graded using an articular index, ranging from 0 to 4.](image)

  ![Fig. 5. Knockdown of miR223 expression with lentiviral vectors expressing the miR223 target sequence (LVmir-223T) reduces arthritis severity (A) and osteoclast differentiation (B).](image)

- **Pathophysiological roles of prothymosin α in emphysema and polycystic kidney disease (PKD)**

  ![Fig. 6. Prothymosin α transgenic mice exhibit PKD and emphysema phenotypes. (A) Homozygous (HZ), heterozygous (HET), and non-transgenic (NT) littermates. (B) Kidney morphology. (C-E) Cyst formation in the kidneys of HZ, but not NT mice.](image)

**Selected recent publication**


