



## Nobuyuki Hizawa

Faculty of Medicine

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### Theme

- To understand the complexity and heterogeneity of chronic inflammatory lung diseases to achieve preemptive medicine and precision medicine.

**Keyword** Chronic inflammatory lung disease, Precision medicine, Asthma, COPD, IIPs, NTM

### Highlight

#### Major Scientific Interests of the Group

- 1) Molecular genetics of asthma and COPD
- 2) Helper T cell paradigm in inflammatory lung diseases
- 3) Cross-talk between pro-inflammatory transcription factors and inflammatory lung diseases
- 4) Molecular targeting for nontuberculous mycobacterial infection

#### Projects for Regular Students in Doctoral or Master's Programs

Students in doctoral and master's programs conduct translational research projects to elucidate the aspects described above using genetic, molecular biological and biochemical techniques.

Multidisciplinary clinical research studies are also conducted. Students are expected to develop study design, give presentations on their research topics

and write scientific papers.

#### Study Programs for Short Stay Students (one week – one trimester)

Our short term programs present opportunities for students to learn how to handle animal research models and to advance their basic laboratory skills. Those who wish to gain additional experience in clinical respiratory medicine may also participate in educational rounds and conferences.

#### Other Faculty Members

Professor: Hiroaki Satoh, Yukio Ishii

Associate Professor: Tohru Sakamoto, Yuko

Morishima, Katsunori Kagohashi, Hideyasu Yamada

Assistant Professor: Yosuke Matsuno, Takumi

Kiwamoto, Hironori Masuko, Kensuke Nakazawa,

Toshihiro Shiozawa, Masashi Matsuyama

### Applications and Prospects

- Our group aims to clarify the complexity and heterogeneity of molecular pathogenesis underlying chronic inflammatory lung diseases to enable preemptive and precision medicine with a more accurate understanding of what is happening inside the patient's body.

### Literature, intellectual property, work

- Tsunoda Y, et al. Has2 deficiency enhances OVA-induced airway inflammation and hyperresponsiveness in mice. *Allergy*. 2020 Dec 19. doi: 10.1111/all.14715.
- Nakajima M, et al. Identification of whole blood gene expressions correlated with responsiveness to benralizumab. *J Allergy Clin Immunol*. 2021;147(2):772-775.
- Nakajima M, et al. Nrf2 Regulates Granuloma Formation and Macrophage Activation during Mycobacterium avium Infection via Mediating Nramp1 and HO-1 Expressions. *mBio*. 2021;12(1):e01947-20.
- Hayashi S, et al. Transcription Factor T-Bet Attenuates the Development of Elastase-Induced Emphysema in Mice. *Am J Respir Cell Mol Biol* 2019;61(4):525-536.
- Sakurai H, et al. Sulforaphane ameliorates steroid insensitivity through an Nrf2-dependent pathway in cigarette smoke-exposed asthmatic mice. *Free Radic Biol Med*. 129:473-485, 2018.