

NeoThy™ Human Immune Engraftment Platform

Human adaptive immunity in a controlled *in vivo* system

The **NeoThy™ Human Immune Engraftment Platform** is designed to deliver physiologic human adaptive immune function in immunodeficient mice. The platform integrates engrafted neonatal human thymic tissue fragments with cord blood–derived CD34⁺ hematopoietic stem cells (HSCs) to support human T cell development within a human thymic microenvironment and human leukocyte antigen (HLA) context.

Following implantation, thymic fragments (representing medulla and/or cortex regions with human thymic epithelial cells) vascularize and establish a functional thymic microenvironment *in vivo*. Human T cells undergo HLA-restricted positive and negative selection within this human thymic microenvironment, enabling peripheral immune reconstitution with functionally mature human T and B cell compartments.

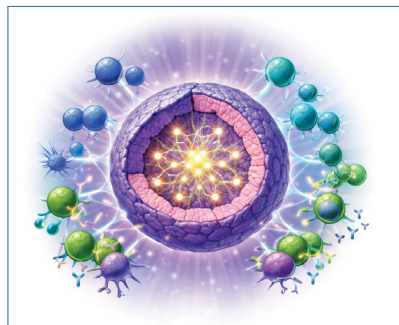
Humanized mice generated using the NeoThy™ Platform demonstrate robust multilineage human immune cell engraftment and organized antigen recognition consistent with human adaptive immune biology.

Why the NeoThy™ Platform Matters

Humanized mouse systems based solely on HSC engraftment support hematopoietic reconstitution but lack a human thymic microenvironment for physiologic T cell education via selection.

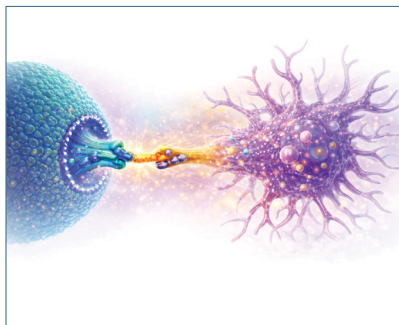
- ▶ Human thymic microenvironment-mediated education supporting HLA-restricted CD4⁺ and CD8⁺ T cell development
- ▶ Organized antigen recognition and immune synapse formation
- ▶ T cell–dependent humoral competency, including antigen-specific antibody responses
- ▶ Reproducible and scalable with a secured IRB-approved human neonatal thymic tissue supply

Human thymic microenvironment-mediated HLA education enables functional adaptive (human) immunity



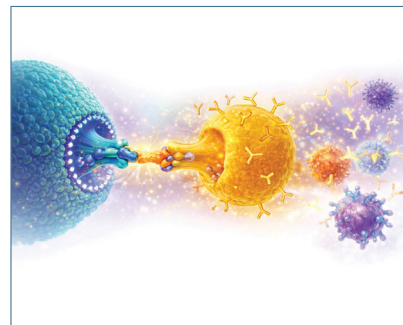
Human Thymic Microenvironment-Mediated T Cell Education

Engrafted human thymic tissue supports HLA-restricted CD4⁺ and CD8⁺ T cell development.



HLA Class II-Restricted CD4⁺ T Cell Activation

More robust helper T cell antigen specificity and activation.



T Cell-Dependent Humoral Immune Function

CD4⁺ T cells help enable B cell activation, plasma cell differentiation, and antigen-specific antibody production.

Model Scope

As with all humanized mouse systems, immune architecture and maturation kinetics differ from human physiology and should be interpreted in the context of model design. The NeoThy™ Platform is intended to enhance translational insight in studies requiring human HLA-restricted adaptive immunity within a controlled *in vivo* framework.

Applications

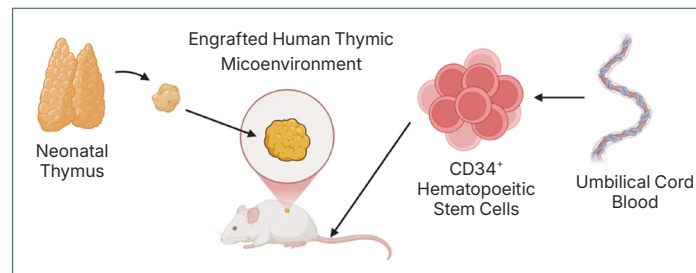
The NeoThy™ Platform supports translational studies requiring functional human adaptive immunity, including:

- ▶ Immunogenicity assessment and anti-drug antibody (ADA) modeling
- ▶ Vaccine response studies
- ▶ Immuno-oncology research
- ▶ Mechanistic immunology programs requiring HLA context

NeoThy™ Platform: Human thymic T-cell education. Functional adaptive immunity. Controlled *in vivo* scalability.

How the NeoThy™ Platform is Generated

- ▶ **Thymic tissue implantation:** Neonatal human thymic tissue is surgically implanted into the kidney capsule under controlled conditions in an immunodeficient host (e.g., NOG and derivative strains).
- ▶ **Cord blood CD34⁺ HSC engraftment:** Intravenous administration of CD34⁺ HSCs supports durable multilineage hematopoietic reconstitution.
- ▶ **Human thymic microenvironment-supported thymopoiesis:** Human T cell development proceeds within the vascularized thymic microenvironment.
- ▶ **Peripheral adaptive immune reconstitution:** Functional CD4⁺ and CD8⁺ T cells populate peripheral tissues and support T cell-dependent B cell activation.



Frequently Asked Questions

- 1 Does the NeoThy™ Platform use fetal tissues?**
No. The NeoThy™ Platform utilizes neonatal thymic tissue obtained as surgically discarded material (medical waste) from medically necessary procedures, with appropriate consent and traceability. No fetal tissue is used.
- 2 What is the source of the thymic microenvironment?**
The thymic microenvironment is derived from engrafted primary tissue fragments sourced from neonatal human thymus resections that would otherwise be discarded during medically-required pediatric cardiac surgeries. Tissue is ethically sourced and suitable for implantation.
- 3 Are thymic tissue fragments expanded *in vitro* prior to implantation?**
No. Primary thymic fragments are implanted without *in vitro* expansion or manipulation. After implantation, thymic fragments vascularize and support sustained thymopoiesis within the host.
- 4 Where do the CD34⁺ HSCs come from?**
HSCs are isolated from umbilical cord blood, providing a clinically relevant and scalable source of human hematopoietic stem cells for multilineage immune reconstitution.
- 5 Is the NeoThy™ Platform produced on demand? What is the lead time?**
Yes. NeoThy™ mice are produced on demand. Lead time varies based on host strain configuration, donor availability, and study design requirements. Taconic provides project-specific timelines during consultation.
- 6 What is the recommended control for NeoThy™ cohorts?**
The recommended control for NeoThy™ animals are strain-matched and donor-matched HSC-engrafted but non-thymic engrafted animals (Thymus-/HSC+). For example, the control for NeoThy™ hIL-6 huNOG is the hIL-6 huNOG. These can be produced at the same time that the NeoThy™ cohort is engrafted. Other controls (Thymus+/HSC- or Thymus-/HSC-) can be ordered based on study requirements. Taconic provides.
- 7 Can studies with NeoThy™ cohorts be performed at a Contract Research organization? Yes.**
- 8 Can you ship NeoThy™ cohorts to my facility?**
Yes, we can ship to any facility that is approved for live animal shipments.
- 9 Is a MTA required?**
No. MTA is required to purchase or use NeoThy™ engrafted mice.

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Scan the QR code to learn more about **Engage with the NeoThy™ Platform**

Engage with the NeoThy™ Platform

- ▶ Review representative immune reconstitution datasets
- ▶ Discuss donor matching strategies
- ▶ Design immunogenicity or vaccine studies
- ▶ Evaluate host strain configurations and production timelines

Get in touch for more information about our products and services. US: 1-888-822-6642
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