



Nucleic Acid Therapeutics Initiative (NATi)

What is it?

- The Nucleic Acid Therapeutics Initiative (NATi), pronounced as 'net-eye', is a national initiative hosted by the Agency for Science, Technology and Research (A*STAR). It will be funded \$97 million under RIE 2025. NATi aims to build Singapore into a regional hub for nucleic acid therapeutics (NAT) research, clinical translation, and commercialisation.
- NAT harnesses the potential of nucleic acids like messenger RNA (mRNA) and small interfering RNA (siRNA) to treat diseases using RNA molecules. This includes personalised cancer treatments, vaccines and therapeutics.
- The NATi programme office works closely with public agencies such as the Economic Development Board, Enterprise Singapore and the Singapore research ecosystem to engage potential local and international industry partners and investors. The goal is to foster strategic collaborations and drive innovations that will positively impact healthcare in Singapore and benefit Singaporeans.

How does it work?

Key Research Pillars

- Innovative developments and emerging technologies in ribonucleic acid (RNA) therapeutics.
- Building up Singapore's resilience against future pandemics through developing accessible novel RNA based vaccines.
- Production of consistent, high-quality, mRNA, siRNA and antisense oligonucleotide (ASO), to support commercialisation in startups, spinoffs and foster collaborations with industry.

Key Platforms

NATi is executed via two thrusts:

- **NAT Exchange (NAT X)** aims to develop novel formulations of NAT, establish safety and efficacy of such medicines, and innovative mechanisms for delivering them to patients. The platform will i) support researchers' development of RNA therapeutics by establishing enabling platforms, and forging alliances with clinical partners, and ii) develop new enabling technologies to address clinical and industrial challenges.

- **RNA Foundry** aims to address industry problem statements and revolutionise RNA manufacturing through the development of next-generation manufacturing technologies and processes. The problem statements include the lack of local production and automation capabilities to accelerate the development of RNA assets to clinical readiness. The RNA Foundry is designed to seamlessly translate RNA assets from scientists and clinicians to produce pre-clinical grade formulated RNA. Under this thrust, two foundries will be established for mRNA-based therapeutics and siRNA/ASO-based therapeutics. Using the processes established at the RNA Foundry, researchers can seamlessly transit from preclinical production to Good Manufacturing Practice (GMP) production for Investigational New Drug (IND) preclinical studies and clinical trials with industry partners.

How can companies tap on NATi?

- Companies can tap on the national initiative to address clinical and industrial challenges using the technologies from both NAT X and the RNA Foundry. The technologies developed in NAT X, such as improved targeting or better RNA design, can be accessed by companies in Singapore either through research collaborations or licensing.
- The RNA Foundry offers companies the capability to manufacture small test batches of RNA therapeutics for pre-clinical work. By integrating top-tier technologies for end-to-end manufacturing, these facilities will enable companies to testbed new processes before deploying them in commercial settings, akin to a Model Factory. This unique set-up sets the RNA Foundry apart from current contract manufacturers in Singapore.
- Solution providers, such as companies specialising in equipment or raw materials can work with NATi to testbed solutions that tackle industrial challenges within the NAT space. In addition, these companies will have opportunities to license innovative technologies developed through NATi-funded projects.
- NATi will also be a platform to connect companies with problem statements or needs to the researchers in the local ecosystem to develop solutions. Companies and research performers keen to collaborate are welcome to reach out to enquiry@nati.sg or visit www.a-star.edu.sg/NATi. The NATi office is located at 31 Biopolis Way #05-01, Nanos, Singapore 138669.

Examples of companies which stand to benefit from NATi:

- **Hilleman Laboratories:**
 - The company has already been collaborating with A*STAR to advance their mission of developing affordable and accessible vaccines. Through NATi, Hilleman Laboratories can leverage access to complimentary technologies to improve cost-effectiveness of RNA drugs and address healthcare needs in our region.

- **Genetic Design and Manufacturing Corporation (GDMC):**
 - The company has already been collaborating with A*STAR to accelerate the development of genetic medicines such as mRNA vaccines and therapies against cancer and infectious diseases. Through NATi, GDMC can gain access to technologies to improve cost-effectiveness of manufacturing high quality RNA drugs and address healthcare needs in our region. Through this partnership, GDMC can also provide support to projects funded by NATi by offering expertise and capacity in scale-up of processes towards GMP manufacturing for clinical trials and commercial use.

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About the Agency for Science, Technology and Research (A*STAR)

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