

## Transgene and NEC demonstrate high accuracy of AI-based neoantigen prediction for the design of individualized cancer vaccine TG4050

- ✓ *TG4050 is being evaluated in two Phase 1 clinical trials. It combines Transgene's proprietary myvac® platform with NEC's cutting-edge Artificial Intelligence (AI) capabilities to select patient-specific neoantigens*
- ✓ *Data confirm that the prediction algorithm successfully identifies immunogenic cancer mutations, even among a large set of candidate mutations*
- ✓ *Data will be presented at upcoming Virtual AACR 2020 Session II*

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Strasbourg, France & Tokyo, Japan, May 15, 2020, 7:30 am CET - Transgene (Euronext Paris: TNG), a biotech company that designs and develops virus-based immunotherapies for the treatment of cancer, and NEC Corporation (NEC; TSE: 6701), a leader in IT and network technologies, today announce that they will present data demonstrating that the prediction algorithm used to customize TG4050 for each patient is accurate at identifying immunogenic cancer mutations even among a large set of candidate mutations. These data were jointly generated by the Transgene, NEC and teams and NEC Laboratories Europe GmbH will be presented at the upcoming meeting of the American Association for Cancer Research (AACR) Annual Meeting 2020 (AACR Virtual Annual Meeting II).

**TG4050 is an individualized therapeutic vaccine based on Transgene's myvac® technology. It is powered by NEC's cutting-edge AI capabilities. Two Phase 1 trials with TG4050 are ongoing in Europe and in the USA.**

TG4050 has been designed to target up to 30 patient-specific neoantigens (cancer cell mutations) which are selected using NEC's Neoantigen Prediction System, an advanced AI technology that has already been applied in the field of oncology. The prediction system is based on more than two decades of expertise in AI and has been trained on proprietary immune data, allowing it to accurately prioritize and select the most immunogenic sequences.

To evaluate the accuracy of the prediction, samples from cancer patients were collected. Healthy and tumor tissue were sequenced, and mutations were identified and ranked using the algorithm. These were then evaluated by measuring the frequency of T cells against the predicted antigens. Although preliminary, the results generated to-date suggest that the system can identify rare immunogenic mutation among a large list of candidates identified in the patients.

Transgene uses its expertise in viral vectorization to incorporate the selected neoantigen sequences in the genome of the Modified Vaccinia virus Ankara (MVA) viral vector. The Company has set up a unique in-house good manufacturing practice (GMP) unit dedicated to manufacturing the individualized batches of TG4050 needed for the clinical development of this novel individualized therapeutic vaccine.

- **Title of the poster:** “Performance of neoantigen prediction for the design of TG4050, a patient specific neoantigen cancer vaccine”
- **Authors:** Brandon Malone, Caroline Tosch, Benoit Grellier, Kousuke Onoue, Timo Szttyler, Karola Rittner, Yoshiko Yamashita, Eric Quéméneur, Kaïdre Bendjama
- **Session Date and Time:** June 22-24, 2020
- **Abstract Number:** 4566

The abstract can be downloaded on the AACR website.

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#### About TG4050

TG4050 is an individualized immunotherapy being developed for solid tumors that is based on Transgene’s *myvac*<sup>®</sup> technology and powered by NEC’s longstanding artificial intelligence (AI) expertise. This virus-based therapeutic vaccine encodes neoantigens (patient-specific mutations) identified and selected by NEC’s Neoantigen Prediction System. The prediction system is based on more than two decades of expertise in AI and has been trained on proprietary data allowing it to accurately prioritize and select the most immunogenic sequences.

TG4050 is designed to stimulate the immune system of patients in order to induce a T-cell response that is able to recognize and destroy tumor cells based on their own neoantigens. This individualized immunotherapy is developed for each patient and can be produced in a very short time frame.

This best-in-class candidate is being evaluated in two Phase 1 clinical trials for patients with ovarian cancers ([NCT03839524](https://clinicaltrials.gov/ct2/show/study/NCT03839524)) and HPV-negative head and neck cancers ([NCT04183166](https://clinicaltrials.gov/ct2/show/study/NCT04183166)).

#### About *myvac*<sup>®</sup>

*myvac*<sup>®</sup> is a viral vector (MVA) based, individualized immunotherapy platform that has been developed by Transgene to target solid tumors. *myvac*<sup>®</sup>-derived products are designed to stimulate the patient’s immune system to recognize and destroy tumors using the patient’s own cancer specific genetic mutations. Transgene has set up an innovative network to support the development of *myvac*<sup>®</sup> individualized immunotherapies that combines bioengineering, digital transformation, established vectorization know-how and unique manufacturing capabilities. Transgene has been awarded an “Investment for the Future” funding from Bpifrance for the development of its platform *myvac*<sup>®</sup>. TG4050, the first *myvac*<sup>®</sup>-derived product, is currently being evaluated in two solid tumor clinical trials.

#### About NEC’s Neoantigen Prediction System

NEC Corporation has established itself as a leader in the integration of IT and network technologies while promoting the brand statement of “Orchestrating a brighter world.” NEC enables businesses and communities to adapt to rapid changes taking place in both society and the market as it provides for the social values of safety, security, fairness and efficiency to promote a more sustainable world where everyone has the chance to reach their full potential. For more information, visit NEC at [www.nec.com](http://www.nec.com). For additional information, please also visit NEC Laboratories Europe GmbH at: <http://www.neclab.eu>

#### About Transgene

Transgene (Euronext: TNG) is a publicly traded French biotechnology company focused on designing and developing targeted immunotherapies for the treatment of cancer. Transgene’s programs utilize viral vector technology with the goal of indirectly or directly killing cancer cells.

The Company's clinical-stage programs consist of two therapeutic vaccines (TG4001 for the treatment of HPV-positive cancers, and TG4050, the first individualized therapeutic vaccine based on the *myvac*<sup>®</sup> platform) as well as two oncolytic viruses (TG6002 for the treatment of solid tumors, and BT-001, the first oncolytic virus based on the Invir.IO<sup>™</sup> platform). With Transgene's *myvac*<sup>®</sup> platform, therapeutic vaccination enters the field of precision medicine with a novel immunotherapy that is fully tailored to each individual. The *myvac*<sup>®</sup> approach allows the generation of a virus-based immunotherapy that encodes patient-specific mutations identified and selected by Artificial Intelligence capabilities provided by its partner NEC.

With its proprietary platform Invir.IO<sup>™</sup>, Transgene is building on its viral vector engineering expertise to design a new generation of multifunctional oncolytic viruses. Transgene has an ongoing Invir.IO<sup>™</sup> collaboration with AstraZeneca.

Additional information about Transgene is available at: [www.transgene.fr](http://www.transgene.fr).

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### **About NEC Corporation**

NEC Corporation is a leader in the integration of IT and network technologies that benefit businesses and people around the world. The NEC Group globally provides "Solutions for Society" that promote the safety, security, efficiency and equality of society. Under the company's corporate message of "Orchestrating a brighter world," NEC aims to help solve a wide range of challenging issues and to create new social value for the changing world of tomorrow. For more information, visit NEC at [www.nec.com](http://www.nec.com).

### **Disclaimer**

*This press release contains forward-looking statements, which are subject to numerous risks and uncertainties, which could cause actual results to differ materially from those anticipated. The occurrence of any of these risks could have a significant negative outcome for the Company's activities, perspectives, financial situation, results, regulatory authorities' agreement with development phases, and development. The Company's ability to commercialize its products depends on but is not limited to the following factors: positive pre-clinical data may not be predictive of human clinical results, the success of clinical studies, the ability to obtain financing and/or partnerships for product manufacturing, development and commercialization, and marketing approval by government regulatory authorities. For a discussion of risks and uncertainties which could cause the Company's actual results, financial condition, performance or achievements to differ from those contained in the forward-looking statements, please refer to the Risk Factors ("Facteurs de Risque") section of the Document de Référence, available on the AMF website (<http://www.amf-france.org>) or on Transgene's website ([www.transgene.fr](http://www.transgene.fr)). Forward-looking statements speak only as of the date on which they are made and Transgene undertakes no obligation to update these forward-looking statements, even if new information becomes available in the future.*