

# **FORSCHUNGSZENTRUM JÜLICH (INM-5), UMC UTRECHT, AND ATLEY SOLUTIONS DEMONSTRATE SCALABLE SUPPLY CHAIN FOR ASTATINE-211**

**Jülich, Germany, Utrecht, The Netherlands, and Gothenburg, Sweden – February 24<sup>rd</sup> 2026 – Forschungszentrum Jülich, UMC Utrecht, and Atley Solutions today announced the successful demonstration of a scalable and flexible supply chain for astatine-211 (At-211) radiopharmaceutical development. The demonstrated proof-of-concept, centered around shipping At-211 in the form of non-purified irradiated bismuth material, establishes a robust end-to-end workflow expanding the availability of At-211 for research and development and clinical use in Europe.**

The demonstrated supply chain consists of:

1. Preparation and irradiation of a bismuth target at Forschungszentrum Jülich INM-5 to produce At-211
2. Separation of the irradiated bismuth material from the target and packaging of the material in a standard Type A transportation container at Forschungszentrum Jülich INM-5
3. Shipment of the package containing the irradiated bismuth material to UMC Utrecht
4. Purification of At-211 from the irradiated bismuth at UMC Utrecht using the Atley C100 module from Atley Solutions, resulting in purified At-211 ready for radiopharmaceutical production

In the proof-of-concept, approximately 2.0 GBq of At-211 was produced at Forschungszentrum Jülich INM-5 and shipped to UMC Utrecht for on-site purification using the Atley C100 module and subsequent radiochemistry use. Both At-211 purification yield and downstream radiolabeling results were in line with those typically achieved by UMC Utrecht when using the same Atley C100 to purify At-211 from irradiated bismuth targets received from Rigshospitalet (Copenhagen, Denmark). Based on these results, UMC Utrecht and Forschungszentrum Jülich now plan to initiate regular At-211 supply using this workflow.

## **Shipping irradiated material - A flexible alternative to shipping purified At-211**

Compared to the shipment of purified At-211, the demonstrated approach offers several important advantages:

- Time, equipment and staffing requirements at the accelerator facility are reduced, simplifying scheduling
- Shipping At-211 in the form of irradiated bismuth material reduces the manufacturing and quality control requirements at the accelerator facility, resulting in a more efficient supply chain
- Performing At-211 purification at the recipient site allows for increased process flexibility, both in terms of purification method employed and species of At-211 generated
- Time between purification and radiolabeling is minimized, which may otherwise affect At-211 radiolabeling yields (Hansson et al., 2024)
- Delaying purification until arrival at the recipient site delays the removal of decay products from At-211 (and At-210, if present), resulting in reduced radionuclide impurities in the final product

## Supporting future clinical At-211 programs

The At-211 supply from Forschungszentrum Jülich INM-5, in addition to the supply from Rigshospitalet, is highly desired by UMC Utrecht. The UMC Utrecht department of nuclear medicine is planning multiple clinical trials with At-211 in the coming years using the Atley C100 module. The approach also represents an attractive option for other radiopharmaceutical drug developers in Europe interested in working with At-211.

*“For our upcoming clinical trials, redundancy in our At-211 supply is of utmost importance to reduce the risk of interruptions,” said **Dr. Alex Poot**, Head of Radionuclide Pharmacy at UMC Utrecht. “Being able to receive both irradiated targets from Rigshospitalet (Copenhagen) and irradiated bismuth material from Forschungszentrum Jülich is therefore a major milestone for us. The fact that the Atley C100 module can accommodate both supply routes allows us to achieve a high degree of reliability and flexibility without introducing variability in our downstream chemistry.”*

*“We are excited to supply At-211 to our local region, supporting activities ranging from research and development to clinical trials,” said **Professor Bernd Neumaier**, Director of the Institute of Neuroscience and Medicine INM-5 at Forschungszentrum Jülich. “We have now demonstrated that our At-211 supply is fully compatible with the Atley C100 module, providing an attractive option for existing and prospective customers.”*

*“We are delighted to demonstrate the compatibility of the Atley C100 with At-211 supply enabled by Forschungszentrum Jülich INM-5,” said **Milton Lönnroth**, CEO of Atley Solutions. “This is an important step for UMC Utrecht and for other drug developers in the region who are interested in working with At-211, and it highlights the flexibility of our platform across different supply models.”*

## About Atley Solutions

Atley Solutions is the global leader in commercial products and services for the development and manufacturing of At-211 radiopharmaceuticals. The Atley C100 is the world’s only commercial module for automated manufacturing of At-211 radiopharmaceuticals, addressing key challenges in radionuclide production and supply chain scalability. In addition to this cutting-edge technology, Atley provides radiopharmaceutical development services and products related to the accelerator-based production of At-211.

## About UMC Utrecht

UMC Utrecht is one of the largest public healthcare institutions in the Netherlands and a leading academic center for clinical research. With world-class expertise in oncology, neurology, and nuclear medicine, the institution is at the forefront of innovation in precision medicine. UMC Utrecht’s radiopharmaceutical research unit plays a key role in translating new therapies from bench to bedside, driving breakthroughs in targeted treatments for cancer and neurological diseases. The institution has received funding for several clinical trials that will utilize the Atley C100 module, e.g. the evaluation of [<sup>211</sup>At]mABG for the treatment of neuroblastoma, together with the Princess Maxima Center for Pediatric Oncology.

## About Forschungszentrum Jülich

Forschungszentrum Jülich (FZJ) is a major interdisciplinary research centre in Germany and one of the largest research institutions in Europe. It conducts cutting-edge scientific research to address major societal challenges in the fields of energy, information, and bioeconomy. The centre operates a wide

range of large and often unique research infrastructures, including supercomputers and particle accelerators. FZJ's work spans from fundamental science to practical applications in areas such as quantum technologies, high-performance computing, sustainable energy systems, and bio-based circular economies. The centre is headquartered near Jülich in North Rhine-Westphalia and collaborates with universities and research partners in Germany and internationally. The INM-5 at FZJ operates an IBA Cyclone 30XP cyclotron and radiochemical laboratories for the processing of At-211. In addition, several research activities with At-211 are carried out.

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