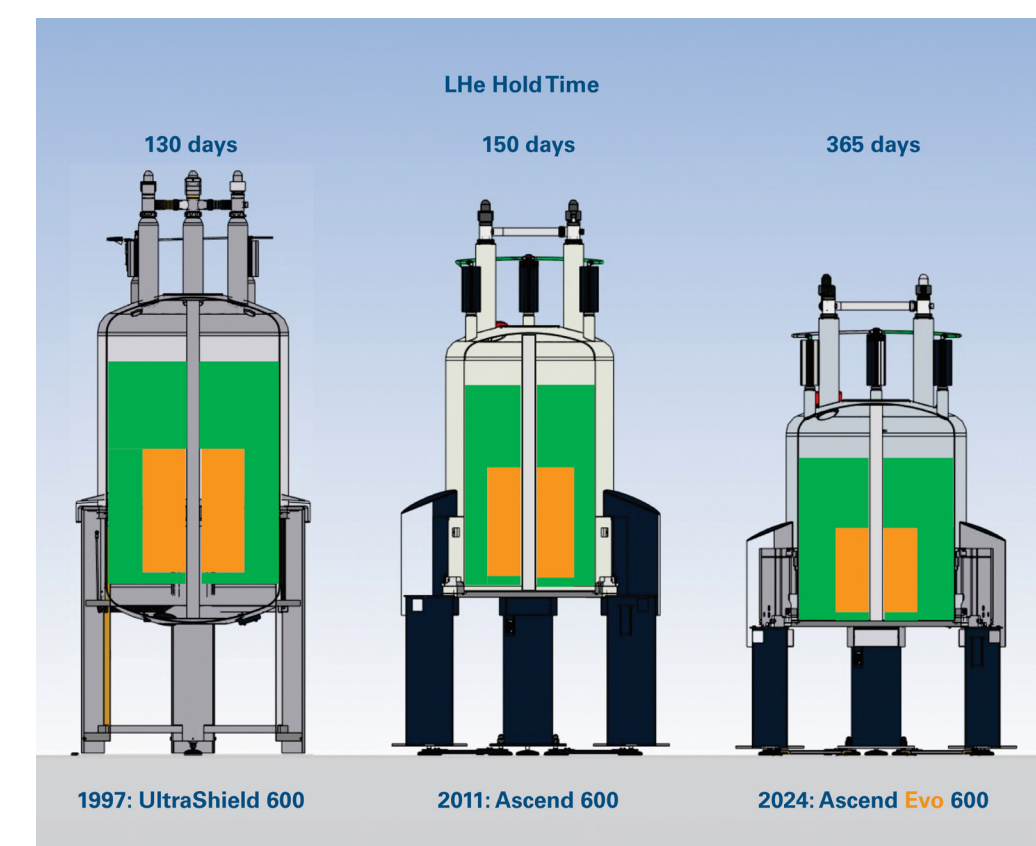


# Ascend Evo Series Expanded 1-Year He Hold Time 600 MHz NMR Magnet



## The Ascend Evo 400, 500 and New 600 Same Size Cryostat and > 1 Year He Hold Time

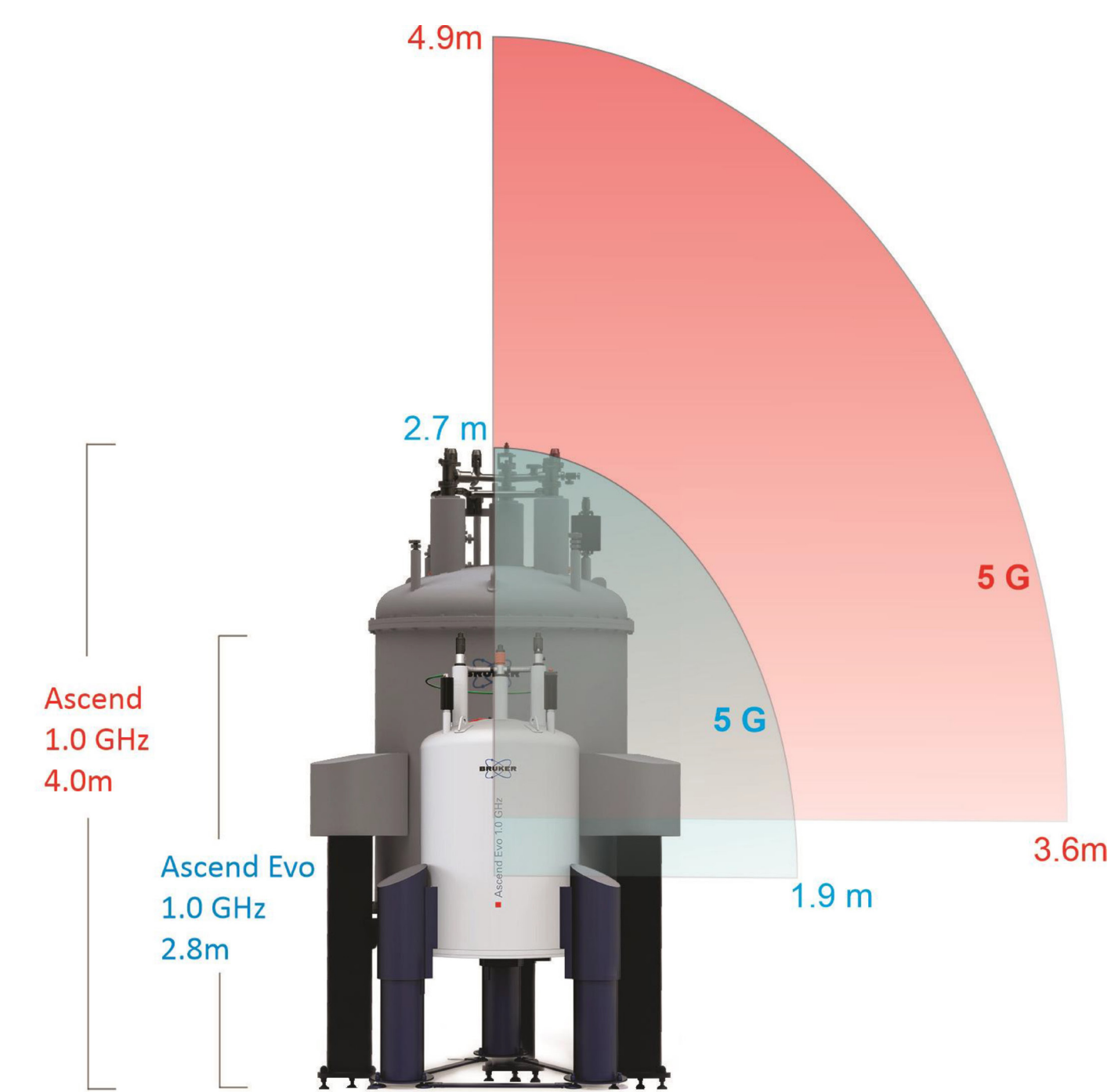
The Ascend Evo 400 was launched in the Spring of 2023 and was followed by the Ascend Evo 500 introduction later in 2023. We are now pleased to announce the Ascend Evo 600 at ENC 2024, a new magnet that is easier to site, has reduced installation and operational costs and an extended He refill interval > 1 year. The Ascend Evo series is the result of a combination of unique cryogenic, magnet coil, and shimming technologies to achieve minimum He consumption, maximum He hold time, and improved field homogeneity.



- Smaller coil volume
  - Increased He volume
  - Longer He hold time
- Smaller cryostat with improved cryogenic design
  - Reduced ceiling height
  - Reduced weight
  - Reduced He boil-off

## The Ascend Evo 1 GHz and 900 MHz

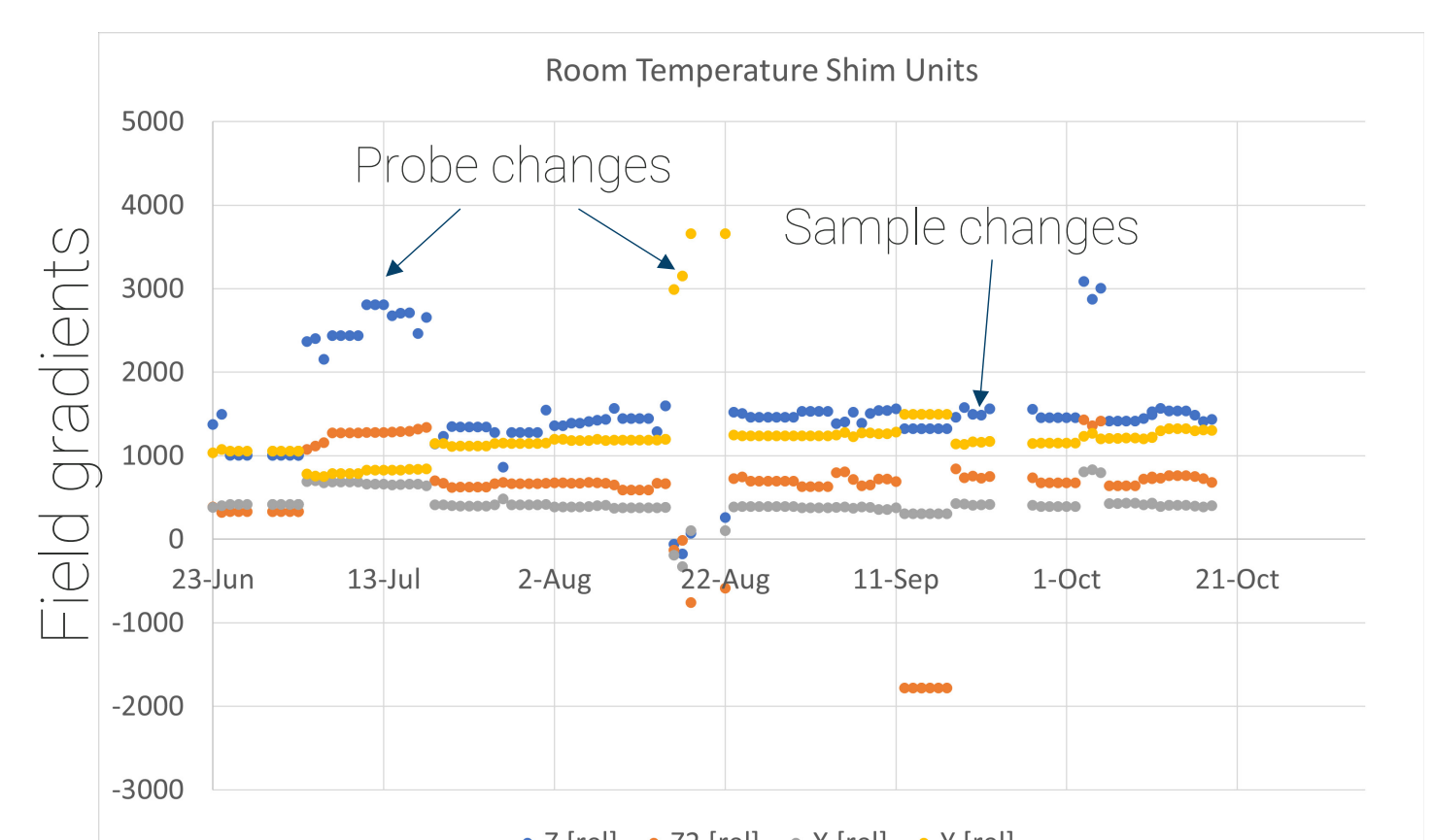
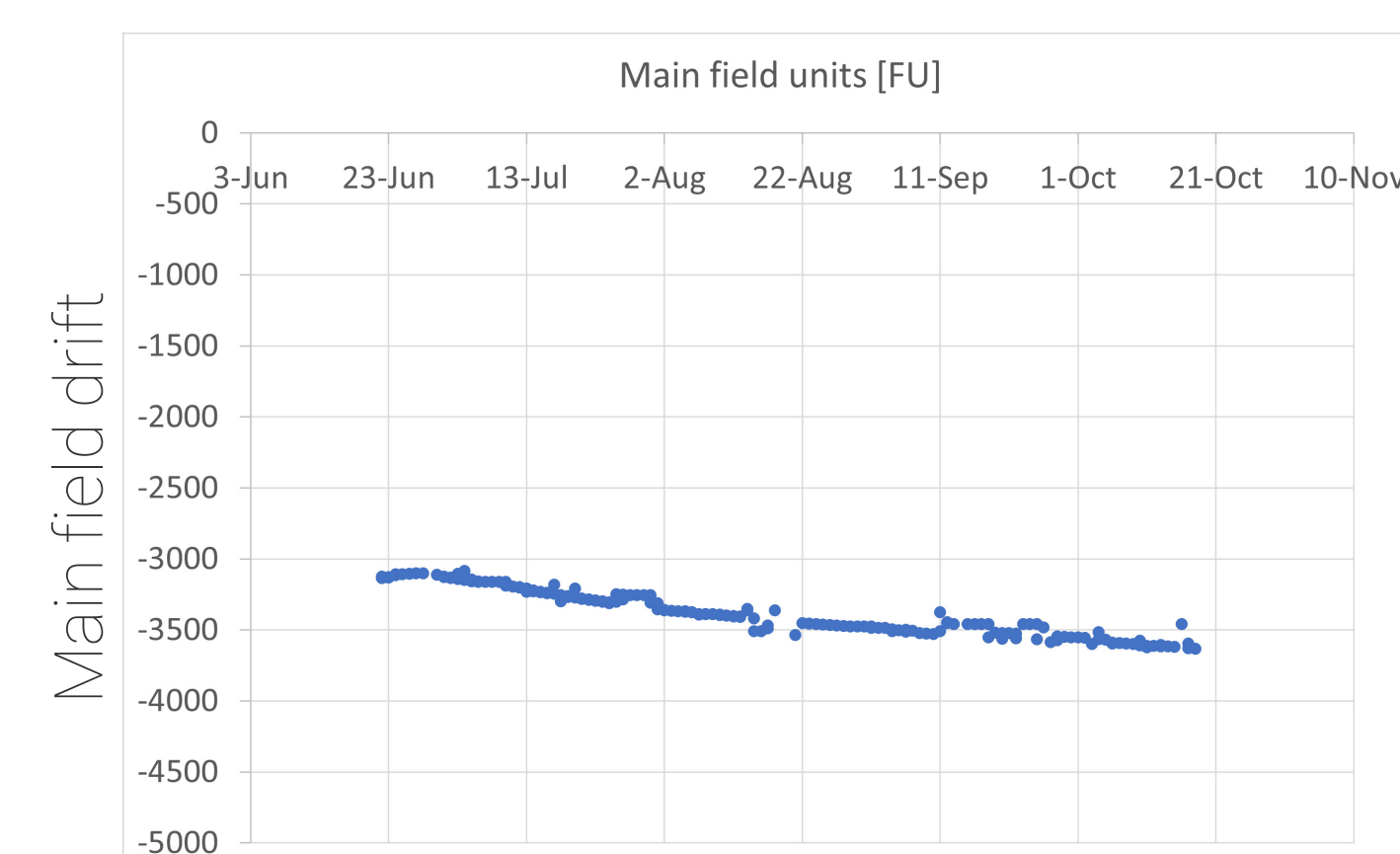
The Ascend Evo series was launched in 2022 with the single story 1.0 GHz and 900 MHz NMR magnets operating at 4.2 K and employing the hybrid HTS/LTS technology that had previously been proven with more than a dozen of 1.1 GHz and 1.2 GHz systems installed and accepted worldwide. When compared to the previous generations of magnets of same field strength, the Ascend Evo magnets reduce the costs for siting, installation, and operation significantly.



- Fits in a standard single-story lab with min. ceiling height of only 3.25 m
- Weighs less than 1/3 compared to previous 1.0 GHz magnets
- Has significantly reduced stray field
- Operates at standard 4.2 K without the need for sub-cooling equipment
- Standard unloading, transport and rigging
- More than 70 % reduction in Helium requirements for both installation and operation

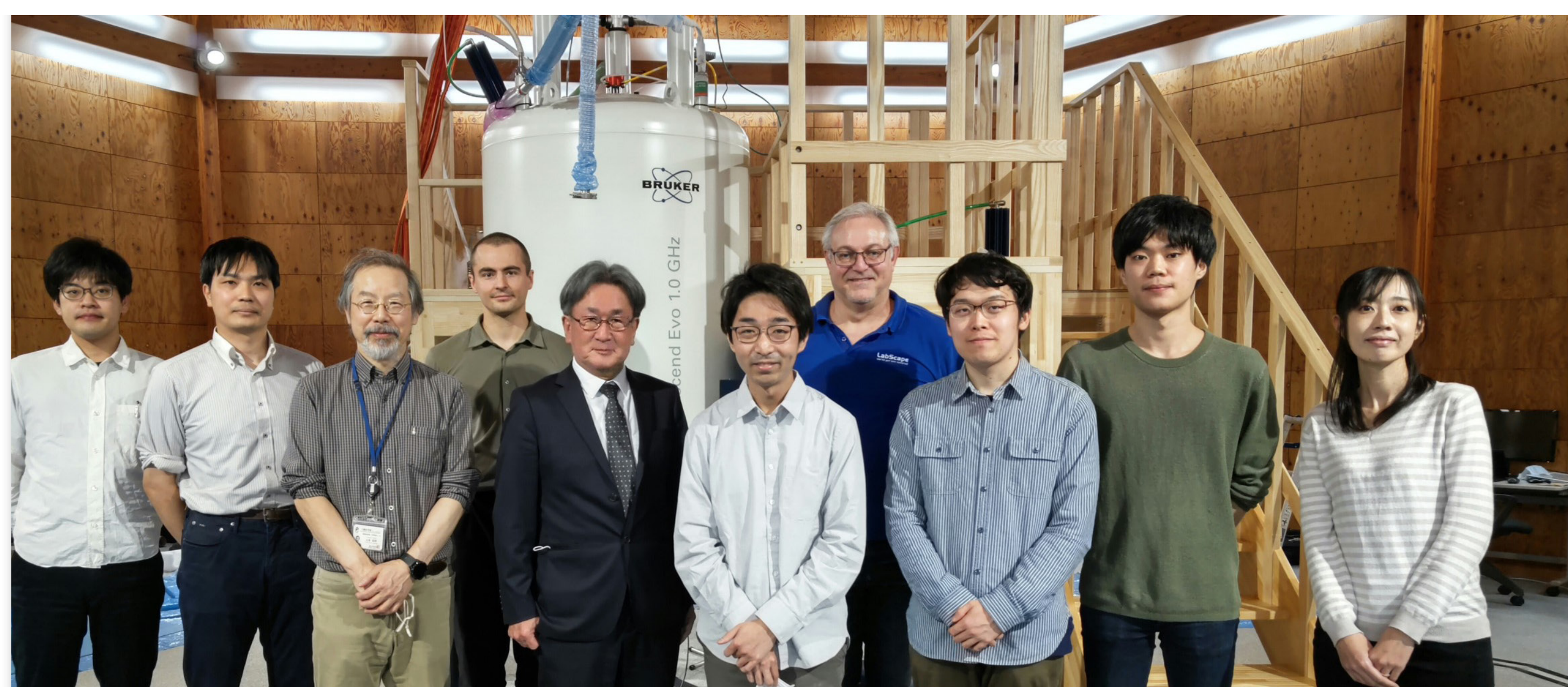
	UltraShield 600	Ascend 600	Ascend Evo 600
<b>Min. Ceiling Height</b>	3.05 m	2.85 m	2.60 m
<b>Total weight</b>	1300 kg	839 kg	690 kg
<b>5 Gauss Stray Field</b>	< 1.8 m radial, < 2.5 m axial	< 0.7 m radial, < 1.4 m axial	< 0.7 m radial, < 1.4 m axial
<b>He boil-off</b>	< 40 ml/hr	< 16 ml/hr	< 13 ml/hr
<b>He hold time</b>	> 130 days	> 150 days	> 365 days
<b>Number of correction field gradients with the cryogenically cooled shim system (on- and off-axis)</b>	9	9	14
<b>EDS (Electromagnetic disturbance suppression), typical</b>	90%	> 99%	> 99%

## Innovative Magnet Shimming, Enabling Early Research Work



Example showing the outstanding long-term stability of main field and homogeneity\* achieved within just days of operation with an Ascend Evo 500 MHz NMR magnet.

\* The larger jumps in the field gradients were caused by probe changes, while the smaller variations were from changing samples. The plots are based on daily data log files for main field values and room temperature shim changes over a period of four months.



**BDR** RIKEN Center for High Pressure Dynamic Research  
Courtesy of Dr. Ichio Shimada, Laboratory for Dynamic Structure of Biomolecules. Riken, Japan.



**UNIVERSITAT DE BARCELONA**  
Courtesy of Prof. Miquel Pons Valles, Group Leader of the BioNMR Group. Barcelona, Spain.



**CICbioGUNE** CENTRO DE COLABORACION EN BIOMOLECULAS  
Courtesy of Prof. Óscar Millet, Group Leader of the Precision Medicine and Metabolism Lab and Dr. Jesús Jiménez-Barbero, Scientific Director of Chemical Glycobiology Lab. Bilbao, Spain.

## Conclusion

- The Ascend Evo 600 MHz NMR magnet is the new and youngest member of the innovative Ascend Evo series that already included the 1 GHz, 900 MHz, 500 MHz and 400 MHz magnets.
- The Ascend Evo 600 magnet features the same size cryostat as the previously introduced Ascend Evo 500 and 400 magnets.
- It requires less ceiling height, is lighter, and has a lower He consumption compared to the previous 600 MHz magnets.
- It features an unprecedented 1-year Helium hold time for a comparable magnet system size.
- It is equipped with Bruker's unique magnet shimming technology for rapid field stability and homogeneity, enabling early research results.