AI methods for automated identification of regions of inflammation from ^{99m}Tc -maraciclatide imaging of rheumatoid arthritis presented at the World Molecular Imaging Congress 2023

London, UK, 9th September 2023, Serac Healthcare Limited ("Serac Healthcare" or "the Company"), a clinical radiopharmaceutical company developing innovative molecular imaging technologies, announces that a poster titled "Automatic segmentation of regions of inflammation using deep neural networks for ^{99m}Tc-maraciclatide gamma camera imaging of rheumatoid arthritis" is being presented at the World Molecular Imaging Society meeting taking place from 5th to 9th September in Prague, Czech Republic.

The poster presentation on Saturday 9th September assesses the application of machine learning to image analysis, evaluating scans taken using an experimental imaging marker, ^{99m}Tc -maraciclatide. This is part of a research project being conducted by a team led by Professor Andrew Reader and Professor Gary Cook at the School of Biomedical Engineering and Imaging Sciences, King's College London, to investigate the application of AI tools to provide diagnostic and prognostic information using ^{99m}Tc-maraciclatide. The presenting author is Robert Cobb, King's College London. The abstract is available here.

Images from previous clinical studies in patients with rheumatoid arthritis have shown that the uptake of ^{99m}Tc-maraciclatide in inflamed synovium, tendons and tendon sheaths, correlates with power Doppler ultrasound images. Machine learning methods have been applied to a dataset of images from 49 of these patients with up to four scans of the patients' hands (total of 192 images), with segmentation maps provided by a clinician of the normal and inflamed tissue within the scans.

The research compares two types of machine learning methods, and demonstrates that a deep convolutional neural network model outperforms a simple thresholding method when analysing areas of normal and inflamed tissue for ^{99m}Tc-maraciclatide images in patients with rheumatoid arthritis, in comparison to clinically segmented labels.

^{99m}Tc-maraciclatide is an unapproved molecular imaging marker, which is in development for the diagnosis and detection of two primary indications: endometriosis and inflammatory arthritis.

About The World Molecular Imaging Congress

The congress brings together people from across the globe who represent the entire spectrum of Molecular Imaging to exchange ideas and foster innovation. Molecular Imaging lies at the heart of precision medicine. WMIC is the event that showcases all of the innovations in Molecular Imaging and shows the utility of novel imaging strategies in clinical investigation and the study of disease. https://wmis.org/wmic-2023-about/

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Notes to Editors

About Serac Healthcare Ltd
Serac Healthcare is a clinical radiopharmaceutical company with deep expertise in discovering, developing and commercialising innovative molecular imaging technologies. Using these targeted technologies to underpin personalised medicine in the fields of endometriosis and inflammatory arthritis, Serac Healthcare is focused on bringing to market effective tools to accelerate diagnosis, and to deliver earlier and more effective treatment decisions. Serac Healthcare Ltd is a wholly owned subsidiary of Serac Life Sciences Limited.

About inflammatory arthritis
Inflammatory arthritis encompasses a number of chronic, progressive, painful, incurable conditions in which the body's own immune system attacks the joints. If untreated they can result in irreversible joint damage and permanent disability. Multiple therapies are available that can slow or even halt disease progression, but current limitations in determining when joints are inflamed means that patients are often over or under treated.

About ^{99m}Tc-maraciclatide and inflammatory arthritis
^{99m}Tc-maraciclatide is a radio-labelled tracer which binds with high affinity to αvβ3 integrin, a cell-adhesion molecule which is up-regulated on activated vascular endothelial cells, activated macrophages and osteoclasts.

^{99m}Tc-maraciclatide planar imaging has the capacity to image the whole body, highlighting total synovial inflammatory load in a 20 minute scan, producing images which are easy to interpret to the untrained observer.

^{99m}Tc-maraciclatide uptake in the joints has been shown to be highly correlated with power Doppler ultrasound (PDUS) in an initial proof of concept study and a subsequent 50 patient rheumatoid arthritis study. Further clinical studies in inflammatory arthritis are expected to commence later this year.

^{99m}Tc-maraciclatide **is for investigational use only and is not approved by the FDA or UK and European regulatory authorities.**