

Heteroaromatic iodonium salts: precursors for ^{18}F labelling

John Woodcraft



Outline

Molecular Imaging

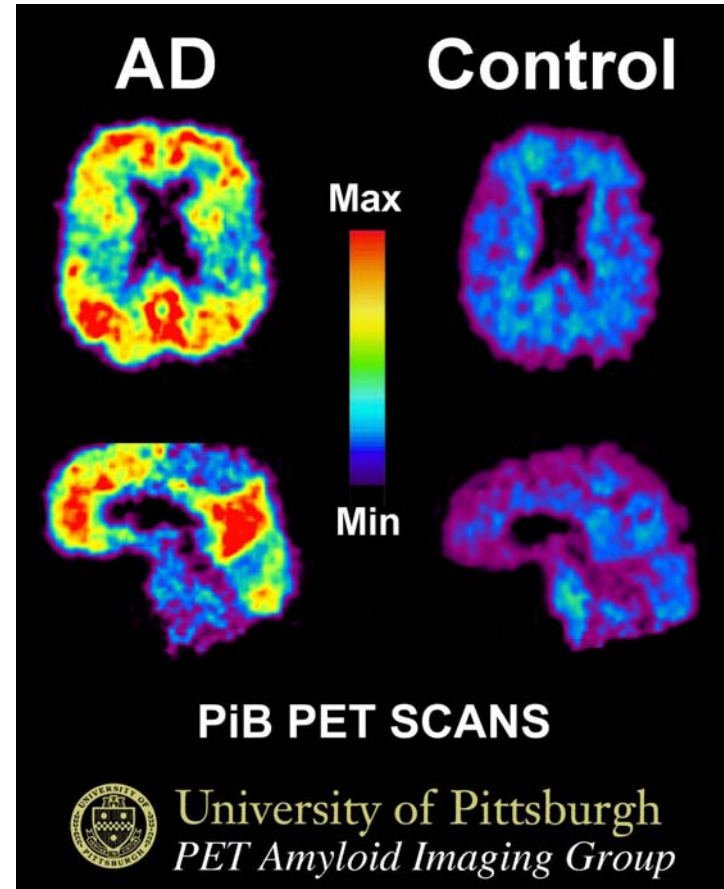
Positron Emission Tomography

Incorporating ^{18}F

Nuclear Medicine & Molecular Imaging

What does it offer?

Early Health



^{18}F (Fluorine-18)

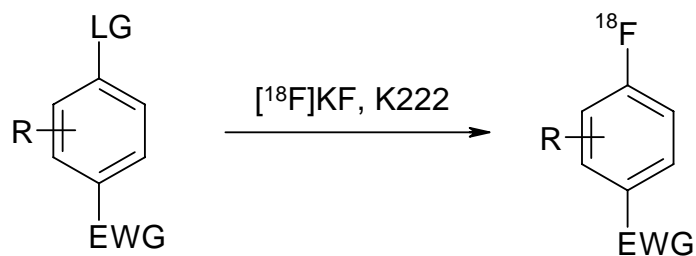
- Proton bombardment of $[^{18}\text{O}]\text{H}_2\text{O}$
- Half Life = 109.8 min
- Positron emission decay
- Chemical forms of ^{18}F
- Why use ^{18}F instead of ^{11}C
- How do you work with it?

Incorporating ^{18}F

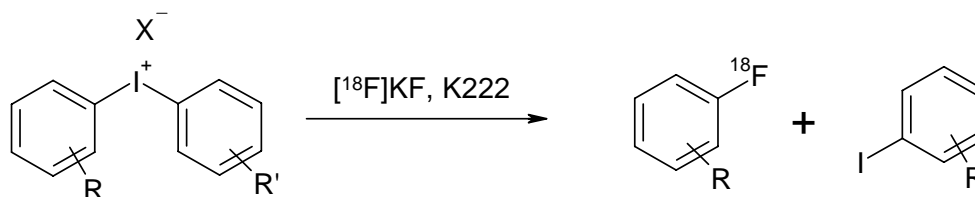
$\text{S}_{\text{N}}2$



$\text{S}_{\text{N}}\text{Ar}$



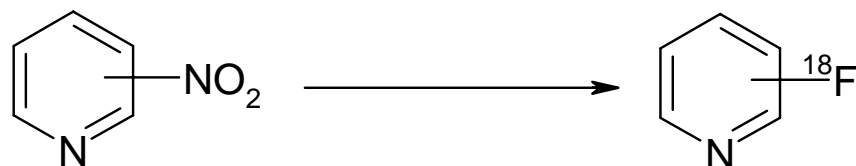
Iodonium
salts



WO2005097713 A1; WO2005061415 A1

[¹⁸F]fluoropyridine

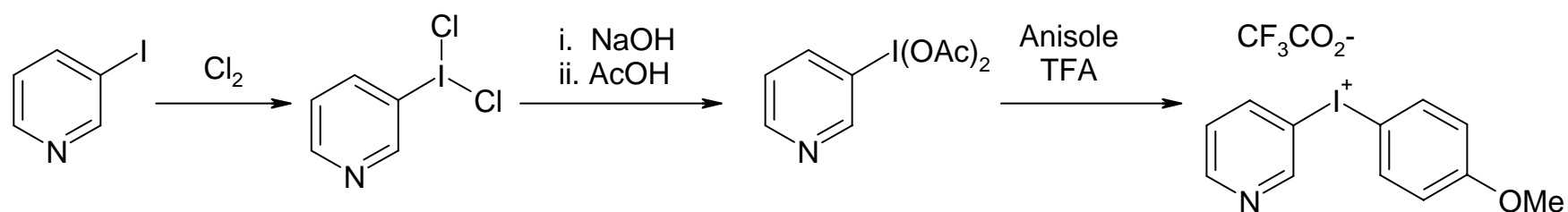
Dollé and Co-workers



NO ₂ Group Position	Radiochemical yield
2	94%
3	2%
4	72%

J. Label. Compd. Radiopharm., 2003, 46, 979-992

3-Pyridyliodonium salt



Radiochemical yield = 58%

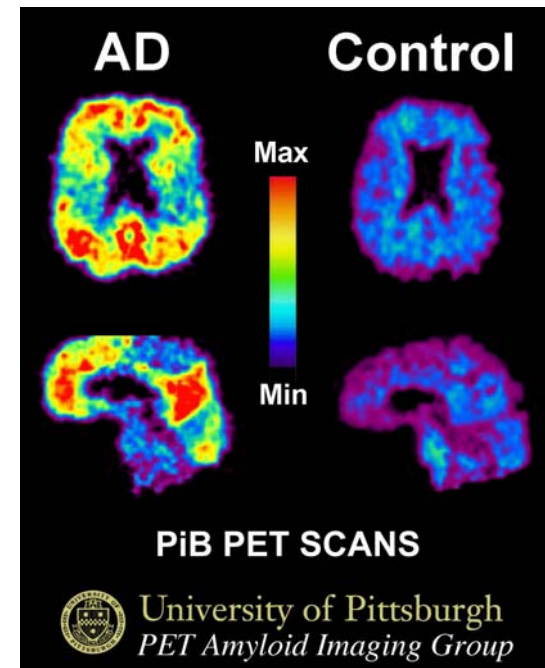
J. Label. Compd. Radiopharm., 2007, 50, 452-454

WO2007/141529

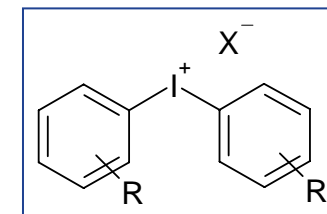
Summary

Molecular Imaging

Positron Emission Tomography



Incorporating ^{18}F



Acknowledgments

M. A. Carroll (University of Newcastle-upon-Tyne)

J. Nairne & R. Bhalla (GE Healthcare)

Funding: EPSRC

GE Healthcare

University of Newcastle-upon-Tyne