

Materials List for:

# Radiotracer Administration for High Temporal Resolution Positron Emission Tomography of the Human Brain: Application to FDG-fPET

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## Materials

Name	Company	Catalog Number	Comments
<b>Blood Collection Equipment</b>			
--12-15 vacutainers	Becton Dickinson, NJ USA	364880	Remain in sterile packaging until required to put blood in tube
--12-15 10mL LH blood collecting tubes	Becton Dickinson	367526	Marked with the sample number (e.g., S1, S2...) and subsequently marked with the sample time (e.g., time 0 + x min [T <sub>0</sub> +x])
--2-15 10mL Terumo syringe	Terumo Tokyo, Japan	SS+10L	These are drawn up on the day of the study and capped with the ampoule that contained the saline
-- pre-drawn 0.9% saline flushes	Pfizer, NY, USA	61039117	
--12-15 5mL Terumo syringes	Terumo Tokyo, Japan	SS+05S	Remain in sterile packaging until ready to withdraw a blood sample
<b>Safety &amp; Waste Equipment</b>			
			All objects arranged on a plastic chair inside the scanner room on the same side as the arm from which the blood samples will be taken. Biohazard and non-biohazard waste bags to be used. Gloves and waste bags to be easily accessible when preparing the radioactivity in the dispensing area and when pipetting the plasma samples. Biohazard and non-biohazard waste bags to be used. All waste generated is checked with the Geiger counter to ensure that radioactive contaminated waste is stored until it is safe to be disposed of according to Australian Radiation Protection and Nuclear Safety Agency (APRNSA) guidelines for Radiation protection series No.6 (2017).
-- Gloves	Westlab, VIC, Australia	663-219	
-- waste bags	Austar Packaging, VIC, Australia	YIW6090	
--cello underpads 'blueys' Underpads 5 Ply	Halyard Health, NSW, Australia	2765A	
--Blue Sharpie pen	Sharpie, TN, USA	S30063	

<b>Dose Syringes</b>			Remain in sterile packaging until ready for use. All syringes used in this facility have an additional 20% volume capacity above the stated volume on the packaging. This is important for the 50mL syringe where the total capacity of 60mL is used
--5mL	Terumo Tokyo, Japan	SS+05S	
-- 20mL	Terumo Tokyo, Japan	SS+20L	
--50mL	Terumo Tokyo, Japan	SS*50LE	
--1 Terumo 18-gauge needle	Terumo Tokyo, Japan	NN+1838R	Remain in sterile packaging until ready to inject [ <sup>18</sup> F]FDG into the saline bag
--100mL 0.9% saline bag	Baxter Pharmaceutical, IL, USA	AHB1307	Remain in sterile packaging until ready to inject [ <sup>18</sup> F]FDG
<b>Radiochemistry Lab Supplies</b>			
--Heraeus Megafuge 16 centrifuge; Rotor Bioshield 720	ThermoScientific MA, USA	75004230	Relative Centrifugal Force = 724 Our settings are 2000RPM for 5mins. Acceleration and deceleration curves set to 8
--Single well counter	Laboratory Technologies, Inc. IL, USA	630-365-1000	Complete daily quality control (includes background count) and protocol set to 18F and 4mins. Cross calibration is performed between the well counter, dose calibrator and scanner on a bi-monthly basis.
--Pipette	ISG Xacto, Vienna, Austria	LI10434	We use a 100-1000 µL set to 1000µL. It is calibrated annually.
--12-15 plasma counting tubes	Techno PLAS; SA Australia	P10316SU	Marked in the same manner as the LH blood tubes
--12-15 pipette tips	Expell Capp, Denmark	5130140-1	
--3 test tube racks	Generic		Checked with a Geiger counter to ensure there is no radiation contamination on them
--500mL volumetric flask and distilled water	Generic		Need approximately 500mL of distilled water to prepare the reference for gamma counting
--Synchronised clocks in scanner room, console and radiochemistry lab	Generic		Synchronisation checks are routinely completed in the facility on a weekly basis
--Haemoglobin Monitor	EKF Diagnostic Cardiff, UK Haemo Control.	3000-0810-6801	Manufacturer recommended quality control performed before testing on participant's blood sample.
--Glucometre	Roche Accu-Chek	6870252001	Accu-Chek Performa is used to measure participant blood sugar levels in mmol/L. Quality control is performed daily using high and low concentration solution control test.
<b>Cannulating Equipment</b>			Check expiry dates and train NMT to prepare aseptically for cannulation.
--Regulation tourniquet	CBC Classic Kimetec GmbH	K5020	
--20, 22 and 24 gauge cannulas	Braun, Melsungen Germany	4251644-03; 4251628-03; 4251601-03	
--tegaderm dressings	3M, MN USA	1624W	

--alcohol and chlorhexidine swabs	Reynard Health Supplies, NSW Australia	RHS408	
--0.9% saline 10mL ampoules; for flushes	Pfizer, NY, USA	61039117	
--10mL syringes	Terumo Tokyo, Japan	SS+10L	
--3-way tap	Becton Dickinson Connecta	394600	
--IV bung	Safsite Braun PA USA	415068	
--Optional extension tube, microbore extension set	M Devices, Denmark	IV054000	
<b>Scanner Room Equipment</b>			
--Siemens Biograph 3T mMR	Siemens, Erlangen, Germany		
--Portable lead barrier shield	Gammasonics	Custom-built	MR-conditional lead barrier shield. Positioned at the 2000 Gauss line with the castors locked to provide additional shielding of the radioactivity connected to the infusion pump.
--Infusion pump BodyGuard 323 MR-conditional infusion pump	Caesarea Medical Electronics	300-040XP	MR-compatible. This model is cleared for use on 1.5 and 3T scanners at 2000 Gauss with castors locked.
--Infusion pump tubing	Caesarea Medical Electronics	100-163X2YNKS	Tubing is administration set with an anti-siphon valve and male luer lock (REF 100-163X2YNKS).
--Lead bricks	Custom built		Tested for ferromagnetic translational force
<b>Other Equipment</b>			
--Syringe shields	Biodex, NY USA	Custom-built	There is a 5mL tungsten syringe shield that is MR-safe, as well as a 50mL lead shield that has been tested for ferromagnetic attraction prior to use in the MR-PET scanner. It is used to transport the radioactive dose from the radiochemistry lab into the scanner to minimise radiation exposure to the NMT.
--Geiger counter Model 26-1 Integrated Frisker	Ludlum Measurements, Inc. TX USA	48-4007	This is calibrated annually and used to monitor potential contamination and waste. It is not taken into the MR-PET scanner.