11th Stem Cell Club Meeting

Cancer stem cells in the brain

(Organised by the Stem Cells Research Singapore Website Committee http://www.stemcell.edu.sg)

Date: May, 17th 2006 (Wednesday)
Time: 5:30 pm
Venue: Matrix, 4th Level, Creation Theatrette

Host: Gerald Udolph, CMM

Time	Title	Speaker
5:30-6:30	***Shared presentation:***	1st speaker: **Ang Beng Ti** *NNI and CMM*
	Applying the principles of stem cell biology to brain tumours	2nd speaker: **Carol Tang** *NNI*
6.30 –	**Networking with cheese and wine**	

This event is sponsored by Carl Zeiss SEA

Applying the principles of stem cell biology to brain tumours

Carol Tang (NNI) and Ang Beng Ti (NNI, CMM)

Primary malignant brain tumours have a dismal prognosis despite surgical resection and adjuvant treatment with radiation and chemotherapy. The exciting and burgeoning field of brain tumour stem cells as an avenue towards better treatment of this disease will be reviewed and we will also give an introductory overview of malignant brain tumour histological grading and the neurosurgical procedures involved in accrual of representative tumour tissue for this science.

We then present our findings using glioma cell lines and brain tumour neurospheres isolated from high-grade malignant astrocytic neoplasms. The isolation and characterization of these cells will be discussed.

Our data focuses on the 'Side Population' (SP), a population of cells in glioma cell lines shown previously to be responsible for Hoechst 33342 efflux, and which have stem cell-like properties. We demonstrate that cells in the SP increase in numbers in response to DNA-damaging concentrations of temozolomide, a drug commonly used in clinic for aggressive gliomas, and are resistant to the effects of the drug. By RNAi knockdown technology, the molecular determinant of this temozolomide efflux was determined to be ABCG2, a drug half-transporter frequently associated with the SP.

Current progress is centered on defining how this SP population differs from the CD133-expressing population, the latter being shown to be a marker for brain tumour stem cells. We believe our study of this clinically important cell population will help shed light on chemoresistance mechanisms in malignant brain tumours.