

# 平成27年度 第一回 重粒子線医工連携セミナー

日時 平成27年8月6日(木) 16:00~18:00

場所 群馬大学 重粒子線医学センター カンファレンス室

1. 国立研究開発法人 放射線医学総合研究所 重粒子医科学センター  
次世代重粒子治療研究プログラム 実験治療研究チーム  
主任研究員 平山 亮一 先生

講演題目

## RBE and OER values depend on radiation actions

Abstract

We estimated the effects of indirect and direct actions on cell killing using radical scavenger (DMSO). CHO cells under oxic and hypoxic conditions were exposed to two intensities of high-LET radiation (13 or 200 keV/ $\mu$ m) in the presence or absence of DMSO and cell survival was determined using a colony formation assay. Under both oxic and hypoxic conditions, the contribution of direct action to cell killing increased with increasing LET. The RBEs determined at a survival level of 10% increased with LET, and the OERs decreased with LET. When the RBE and OER were estimated separately for direct action ( $RBE_{DA}$  and  $OER_{DA}$ ) and indirect action ( $RBE_{IA}$  and  $OER_{IA}$ ); the  $RBE_{DA}$  was larger than  $RBE_{IA}$  and the  $OER_{DA}$  was smaller than  $OER_{IA}$ . Thus the direct action of heavy-ions yielded a remarkably larger RBE and smaller OER for cell killing than the indirect action.

2. 国立研究開発法人 放射線医学総合研究所 重粒子医科学センター  
次世代重粒子治療研究プログラム 実験治療研究チーム

Bopp Cecile, PhD

講演題目

## Microdosimetric approach to the inclusion of oxygen effect in treatment planning for charged particle therapy

Abstract

Modelling the effects of the hypoxia of tumours and taking it into account during the treatment planning process is currently being explored as a possibility to further take advantage of charged particles — and carbon ions in particular — for treatment. Previous approaches have been put forward to consider the oxygen enhancement ratio (OER) as a dose modification factor, as a function of oxygen pressure and linear energy transfer (LET). Our study aims at investigating the possibility to include the effect of hypoxia in the microdosimetric-kinetic model used for treatment planning at NIRS.

3. 群馬大学 LPhD 1年



Miss Athena Paz

講演題目

## Research proposal at Gunma University

Abstract

In order to increase scientific understand of ion therapy, we propose OER experiments using carbon beams at Gunma University.

＝共催＝  がんプロフェッショナル養成基盤推進プラン  
放射線治療人材養成8大学連携プログラム  博士課程教育リーディングプログラム  
群馬大学 重粒子線医工学グローバルリーダー養成プログラム

●お問い合わせ先

群馬大学重粒子線医学研究センター 猪爪 (E-mail:inoino@gunma-u.ac.jp)

〒371-8511 群馬県前橋市昭和町3-39-22 TEL: 027-220-8378