量子科学技術研究開発機構量子医科学研究所 HIMAC 利用研究課題申請書　（　　年度）

Proposal for Research Project at QST-HIMAC (FY　　)

*1 課題整理番号 Project No.		□所内利用／共同研究 Collaborative Research □有償利用　□成果を公開する有償利用 Paid Use　Paid Use to publish results	年　月　日 Date(yy/mm/dd)

*2 分類 Category	□新規　□継続 2 年目　□継続 3 年目　□4 年目新規 New　2nd year　3rd year　4th year			□治療・診断　□生物　□物理・工学 Clin & Diag　Biology　Physics	
研究課題名 Title of Research Project					
*3 課題申請者 Spokesperson	氏名 Name	Last/First/M		職名 Title	
	所属機関名、部署名 Institution 住所　〒 Address 電話 phone:　　fax: e-mail:				
*4 共同研究者 Co-researcher at QST	氏名 Name		所属部課 Division		内線 ext.
研究の目的と意義 Objective of Project			*5 想定している研究年数 Assumed years of research		

MT に関する希望 Beam Time Request	加速粒子 Particle	エネルギー Energy （MeV/u）	強度又は線量率 Intensity	日数又は時間 Hours Requested	ビームコース Beam Line 1: HIMAC 生物照射室(Bio) 2: HIMAC 中エネ照射室(Mid-Energy)

	氏名 Name	所属 Institution	職名 Title	量研での身分 Status at QST
*4 研究分担者 List of Participants (Last/First/M)				

日本語又は英語で書かれた「研究計画詳細」を添付すること。

*1 量研機構側で使用するので記入しないこと。*2 該当するものにチェック。*3 課題申請者は量研機構との事務連絡も担当する。*4 **機構外の方が共同研究の一環で課題申請する場合、記載は必須です。機構内課題で外部機関の人が研究分担者に入る場合、来所の有無にかかわらず共同研究契約等の締結は必須です。** *5「研究計画詳細」の「2. 研究計画」中に根拠を必ず記載してください。

Additional information should be presented on separate sheets in either Japanese or English.

*1 Office use only. *2 Check categories. *3 All correspondence will be sent to the spokesperson. *4 Required if used for collaborative research. *5 This rationale must be included in the “Details of the Proposal” section “2. Experimental Methods”.

安全性及び実験遂行に必要な手続きの確認
Safety Issues and Special Requirements

申請する内容に該当する項目にチェックを入れ、その詳細と対策/手続きについて数行にまとめて記載して下さい。記入する際は青字部を消してから記入してください。
なお、本申請書で申請されていない場合、下記に該当する実験は実施できません。
Please check the boxes that apply to what you are applying for and describe the details and measures/procedures in a few lines. When filling out the form, please delete the blue text before filling in the form. If this application is not submitted with this form, the following experiments cannot be conducted.

	項目	実施	詳細及び安全対策　Details and safety measure
共通 Common items	標準条件外 Out of standard operation	□	提供条件以外の条件での実験を計画されている場合は、詳細、及び QST の共同研究者との打合せ状況を記載してください。 If you plan to conduct experiments under conditions other than those provided, please describe details and the status of meetings with your collaborator in QST.
	高線量照射 High dose irradiation	□	同一サンプルに対して 1000Gy 以上照射を予定している場合には、取り扱いに関する安全対策を記載してください。 If you plan to irradiate more than 1000 Gy to the same sample, please describe the safety measures for handling.
	照射試料の持出 Carrying out of irradiated materials	□	照射したターゲット、細胞、動物などを管理区域から搬出する計画があるときは、放射線レベルについての見積もりを記述してください。放射化した状態の物品を搬出する場合は事前に放射線安全課と協議する必要があります。 If you plan to carry out targets, cells, animals, etc. from the radiation-controlled area after irradiation, please describe your estimate of radioactivity levels.
	有害物質（毒劇物、農薬等） Toxic Substances	□	有害物質の利用を予定されている場合は、使用予定の薬剤名、入手方法（持ち込み/QST 千葉地区内研究者からの分与）、安全対策・廃棄方法について記載してください。 If you plan to use toxic substances, please describe the name of the chemical, how to obtain it, those safety measures, and disposal methods.
生物 Biology	動物実験 Animals	□	動物の種類 the type of animal：_____ 入手手段 How to get it?: □持込 Bring-your own, □QST で購入 Buy at QST □未定 not determined, □その他 Other, details: _____ QST への申請 Application to QST： □Done/□Yet 実施体制 Implementation Structure(QST 千葉地区以外の方): _____

	遺伝子組換え実験 Genetically modified organism	□	□P1/□P1A/□P1P/ □P2/□P2A/□KO by genome editing 詳細 Details:_____ QST への申請 Application to QST： □Done/□Yet 実施体制 Implementation Structure(QST 千葉地区以外の方): _____
	ヒトサンプル Human-derived experimental materials	□	詳細 Detail of the sample:_____ QST への申請 Application to QST： □Done/□Yet 所属機関の承認 Approval from your institution： □Done/□Yet 実施体制 Implementation Structure(QST 千葉地区以外の方): _____
	微生物実験 Microbiological Experiments	□	□BSL1/□BSL2 微生物の種類 the type of microorganism：____ QST への申請 Application to QST： □Done/□Yet 実施体制 Implementation Structure(QST 千葉地区以外の方): _____
	向神経薬 Neurotropic drugs	□	薬品名 Drug name:_____ 入手手段 How to get it?: □持込 Bring-your own, □分与 from QST staff, name:_____ □未定 not determined, □その他 Other, details:_____
	その他 Others	□	生物系実験でリスクが想定される事項があれば、その詳細と安全対策について記載してください。 Please describe any other possible risks and safety measures for them.
物理・化学系 Physics /Chemistry	ガス Gas	□	使用するガスの種類、想定される危険性とその安全対策について記載してください。 Please describe the size and weight of heavy equipment and the method of carrying in and out.
	その他 Others	□	物理系・化学系実験でリスクが想定される事項があれば、その詳細と安全対策について記載してください。（例）重量物の搬入、搬出 Please describe any other possible risks and safety measures. e.g. Carrying in and out heavy objects.

生物照射室内で使用できる電源

Power supply available in Bio-irradiation room

3φ3W　210V　2 箇所（配電盤）	switchboard, 2 locations
1φ3W　210/105V　2 箇所（配電盤）	switchboard, 2 locations
100V　2 個口 4 箇所（コンセント）	type A, 2 sockets, 4 locations

生物照射室に搬入できる荷物の上限

Freight elevator: Must be used for carrying heavy items into Bio-irradiation room

重量　500kg	weight limit
寸法　900mm×1100mm×1180mm	dimension limit

INSTRUCTIONS FOR PREPARATION OF "DETAILS OF THE PROPOSAL"

Directions

Provide information relevant to "Details of the Proposal" using the following format:

* Information should be typed on A4-size white paper.
* The name of a spokesperson should be typed in the margin of the upper-right corner.
* The length of the document should be 6 pages or less, including figures and tables.
* Because black-and-white copies will be distributed to the PAC review committee, the use of color figures is discouraged.

1. Background and objectives of the proposal

Background and objectives of the proposal should be presented in a self-explanatory manner. You should be aware that some members of the PAC review committee may not be familiar to specific details of the research field. The necessity for using heavy-ion beams for these experiments, as well as additional merits for using heavy-ion beams in related disciplines, should be emphasized.

2. Experimental Methods

The details of the experiment, including the setup of equipments, handling of targets, beam-irradiation schedule, data acquisition, etc., should be explained. If special devices are to be used, details of including logistics relating to installation and operation of the device should be clarified. A description of ion species, the irradiation field-size, energies, intensities, and quality of beams should be included. Beam time schedules or critical timing restrictions should be mentioned.

Plans for future studies should be outlined if the experiments are expected to continue in a 2nd or 3rd year.

3. Progress up to this point (if this is a renewal application)

Progress of the experiments at HIMAC up to this point should be summarized.

Additional procedures are requested if the proposal is in the 4th consecutive year (19J***, 19H***). In this case, a more detailed summary of the last 3 years should be attached. This is a separate document with a length of around 3 pages. Contents overlapping with previous annual reports are acceptable.

4. Estimation of the beam time

The request for necessary beam time should be based on the experiment plan. This should include a description that emphasizes the feasibility of the entire experimental process.

5. Target material

Biology Experiments

It is essential to characterize targets used for the experiments including *in vitro, in vivo* or other systems. The size, structure, and composition of any target containers should be described. Information relating to beam characteristics (e.g., size and uniformity) as well as absorbed dose and dose rates should be included.

For *in vitro* systems: any processing before and after irradiation, such as incubation, should be explained. This includes duration and necessary equipment.

For *in vivo* systems: the kind of animals, number of animals, and a method for transporting those animals, should be explained as well as handling and feeding procedures before and after irradiation.

Special attention should be devoted to the proposal when recombinant DNA, cells or animals are to be used. It is strongly recommended to contact the liaison person at QST-Chiba before submission in those cases.

Physics Experiments

A list describing the desired targets should include the material, size, as well as desired ion, beam shape and intensity.

6. List of the publications

Papers published by participants should be listed using to the following instructions. This list should be succinctly related to the scientific objectives of this proposal. Failure to follow these instructions, or the inclusion of extensive or unnecessary information, may result in low scores.

(1) The list of publications should be closely related to the proposal, and published during the last 5 years.
(2) The list should be sorted chronologically from recent to old. Do not sort them according to authors.
(3) A title, names of authors, name of journal, volume number, pages, year of publication should be included.
(4) Authors who are also participants of this proposal should be underlined in the list.

* Safety evaluations, special requirements, and other safety matters should be documented in the "Safety Issues and Special Requirements" checklist.