

# LhARA Memorandum of Understanding

## Preamble

The objective of the Laser-hybrid Accelerator for Radiobiological Applications (LhARA) Collaboration is to:

- Design, build and operate a laser-driven proton and ion accelerator for the study of the radiobiology relevant to the treatment of cancer. The LhARA facility is described in detail in the document *The Laser-hybrid Accelerator for Radiobiological Applications*<sup>1</sup>;
- Pursue a cutting-edge radiobiology research programme in which the novel techniques developed by the collaboration play an ever increasing role and which culminates in the exploitation of the uniquely flexible LhARA facility; and
- Generate clinical and other impact through incremental deployment of the novel techniques and technologies developed by the collaboration.

## LhARA management

The LhARA management structure consists of the Institute Board, the Executive Board, the Project Management Board and the Science Board. The roles and relationships of these bodies are described below.

### The Institute Board

The IB represents the interests of all the groups in the LhARA Collaboration. All major decisions of the LhARA management must be endorsed by the IB, which also makes all major decisions on Collaboration policies and procedures.

Decisions on applications for membership of the LhARA Collaboration are made by the IB.

The IB elects the Spokespersons of the Collaboration and ratifies the appointments of the Project Scientists, the Project Manager, the Biological Science Programme Manager, the Impact Programme Manager and the Work Package Managers.

The IB ratifies major technical decisions and determines the distribution of responsibilities within the Collaboration for delivery of elements of the LhARA programme.

The IB ratifies the Collaboration's science programme, as presented by the Science Board, elects the Projects Scientists and ratifies appointments to the Science Board.

### IB membership

One person with voting rights representing each institute, chosen by the institute.

The LhARA Patient Representatives.

The LhARA Spokespersons.

The LhARA Project Manager, the Project Scientists, the Biological Science Programme Manager, and the Impact (clinical and industrial) Programme Manager (when appointed).

A representative of the Ion Therapy Research Facility (ITRF).

The Work Package Managers.

The LhARA Secretary.

The Chairpersons, Spokespersons, Project Scientists, Programme and Project Managers do not represent their institute and do not vote. WP managers may represent their institute and vote. The Patient Representatives do not vote.

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<sup>1</sup> <https://ccap.hep.ph.ic.ac.uk/trac/raw-attachment/wiki/Communication/Notes/CCAP-TN-10.pdf>

The IB Chairpersons may invite non-voting guests to attend meetings as appropriate.

#### IB working practices

The IB strives to reach consensus whenever possible.

Meetings are quorate when half the LhARA institutes are represented. Votes require the participation of at least half the LhARA institutes.

Meetings of the IB are held in association with the LhARA Collaboration Meetings twice a year. The agenda for these meetings is prepared by the Chairpersons in collaboration with the Spokespersons and is circulated to the IB at least one week in advance of the meeting. Any member of the IB may ask for additional topics to be considered. The agenda is made available to the Collaboration on the LhARA wiki pages.

IB members can send an alternative member of their institute to the IB meeting or they may nominate another member of the board to act as proxy in any votes, provided this is communicated in advance to the IB Chairpersons.

The proceedings of the IB are recorded in draft minutes which are circulated to members of the IB, which are amended as necessary and approved at the next meeting. A summary of the meeting is made available on the LhARA wiki pages.

#### The Executive Board

The EB has responsibility for managing LhARA programme including the design, construction and operation of the LhARA accelerator and the associated experimental facilities. It has responsibility for managing the LhARA project, including administering the project's finances, steering the LhARA design and overseeing its construction. As the radiobiology and impact programmes develop, the EB will have equivalent responsibilities with respect to these programmes.

The LhARA programme is broken down into Work Packages, representing each of its major elements. The EB is responsible for proposing Work Package managers to the IB, which ratifies their appointment.

The EB reports all its major decisions to the IB, and describes the technical and scientific progress of the LhARA project to the IB at its meetings.

The EB presents the status of LhARA to the ITRF and the LhARA Oversight Committee.

#### EB membership

The LhARA Spokespersons, who chair the EB meetings.

The Project Manager.

The Project Scientists.

The IB Chairpersons.

The Work Package managers.

#### EB working practices

EB meetings are held on at least a monthly basis. Minutes of the meetings are circulated for comment and approved at the subsequent meeting with any necessary amendments. The minutes are available on the LhARA wiki pages.

#### The Project Management Board

The PMB consists of the managers of the LhARA Work Packages. It is responsible for the day-to-day running of the LhARA project. Technical and scientific decisions made in the WPs are reported to the PMB and those which have wider impact communicated to the EB.

### PMB working practices

The PMB meets on a weekly basis to coordinate scientific and technical efforts within LhARA. Notes documenting significant decisions are posted on the LhARA wiki pages.

### The Science Board

The Science Board (SB) is responsible for the scientific output of LhARA. The SB, under the leadership of the Project Scientists, selects its members from the Collaboration, and the appointments are ratified by the IB. The Science Board steers the experimental programme at LhARA.

The SB appoints editors of major Collaboration publications who oversee the writing and circulation of drafts within the Collaboration before publication.

The SB is responsible for ensuring that LhARA is represented at relevant conferences and oversees the writing of conference presentations and papers, ensuring these are appropriately reviewed within the Collaboration.

As and when this becomes appropriate, the SB will establish a committee which is responsible for publishing LhARA Calls for Proposals and refereeing the submitted documents.

### SB working practices

The SB meets on a monthly basis, initially in association with the EB, to coordinate LhARA scientific and technical publications, conference contributions and review the Collaborations scientific programme. Draft minutes of SB meetings are circulated to members of the SB, initially as part of the EB, prior to ratification at the subsequent meeting. Minutes are posted on the LhARA wiki pages.

## LhARA membership

The institutes which are members of the LhARA Collaboration are listed in the document *The Laser-hybrid Accelerator for Radiobiological Applications*. Any suitably qualified scientist or graduate student belonging to one of these organisations and spending a significant fraction of their research time working with LhARA may become a member of the Collaboration.

LhARA welcomes members of all races, ethnicities, genders and sexual orientations. With regards to equality, diversity and inclusion, and other working conditions, members of LhARA will be subject to the rules and regulations of their host institution. That is, while working on LhARA business as a visitor to an institution other than that to which they are affiliated, a LhARA collaboration member will be subject to the rules and regulations of the institution at which they are a visitor.

Institutes wishing to join LhARA may apply to the IB. A case must be presented to the IB, which will then vote on whether to accept the application. A majority of two thirds is required.

## Roles within the LhARA Collaboration

The multidisciplinary nature of LhARA makes it important that the experience and knowledge of the biology and physics communities is represented at all levels of the Collaboration. Key roles (Spokespersons, Projects Scientists, IB Chairpersons) are therefore filled by members from both communities.

### The Spokespersons

The Spokespersons are responsible to the Institute Board for the execution of the LhARA programme.

The Spokespersons represents LhARA to scientific committees, to the ITRF management and to the outside world.

The Spokespersons chair the Executive Board.

The four-year terms of the Spokespersons are staggered, the biology position being filled two years after the physics position etc.

The Spokespersons are nominated by IB members and elected by a vote of the IB.

The election takes place no later than six months before the termination of the current Spokespersons' terms of office.

Candidates' names are announced at least one month before the election and the candidates are required to present their proposals for the forthcoming term to the IB.

The Spokespersons can be dismissed by a two-thirds majority vote of the IB.

### The IB Chairpersons

The IB Chairpersons are nominated and elected by the IB.

The period of office is two years with the possibility of re-election and the biology and physics positions are staggered, as for the Spokespersons.

The appointment of the IB Chairpersons can be terminated at any time by a vote of more than two-thirds of the IB.

### The Project Scientists

The Project Scientists are nominated and elected by the IB.

The period of office is two years with the possibility of re-election for one additional term. The biology and physics positions are staggered.

The appointment of the Projects Scientists can be terminated at any time by a vote of two-thirds of the IB.

### The Programme and Project Managers

The Programme and Project Managers are nominated and elected by the IB.

Each Programme and Project Manager's term is two years, with re-election for an unlimited number of terms being possible.

The appointment of the Project Manager can be terminated at any time by a vote of two-thirds of the IB.

### The Work Package Managers

The Work Package Managers are nominated by the EB and their selection ratified by the IB.

The Work Package Managers' terms are two years, with re-election for an unlimited number of terms being possible.

The appointment of the Work Package Managers can be terminated at any time by a vote of two-thirds of the IB.

## Patient Representatives

A minimum of two Patient Representatives are selected by the IB. Their terms are two years long, with multiple extensions being possible.

## Intellectual Property

Each institute in LhARA is entitled to use for its own purposes any knowledge acquired during the development of the LhARA programme, whether patentable or not, as well as any expertise developed during its manufacture. The parties agree to share all apparatus developed or acquired as part of the LhARA programme, all simulated and experimental data acquired as part of the LhARA programme, all results obtained from such data, and all utilities such as data analysis tools or simulations programs.

## This Memorandum

This Memorandum implies no legal commitment for the construction of LhARA. However, by signing this document, the scientists leading the project at the LhARA institutes express their intent to participate in the construction and operation of LhARA and support the Collaboration's scientific programme.