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| ID[[1]](#footnote-1): Bio\_2 | Title: The Geant4-DNA project at the Physics-Biology frontier | | | | | | | | | | | |
| Leader **Members** | **French Group** | | | | | | **Japanese Group** | | | | | |
| Name | | **Title** | | **Lab./Organis.[[2]](#footnote-2)** | | **Name** | | **Title** | | **Lab/Organis.[[3]](#footnote-3)** | |
| Leader  Sébastien Incerti | | Dr. | | CENBG/IN2P3 | | Leader Takashi Sasaki | | Prof. | | KEK. | |
|  | |  | |  | | Katsuya Amako | | Prof. | | KEK | |
|  | |  | |  | | Koichi Murakami | | Dr. | | KEK | |
|  | |  | |  | | Chihiro Omachi | | Dr. | | Nagoya City | |
|  | |  | |  | | Akinori Kimura | | Prof. | | Ashikaga Inst. Tech. | |
|  | |  | |  | | Yoshiyuki Hirano | | Dr. | | Gunma University | |
|  | |  | |  | | Shogo Okada | | Dr. | | KEK | |
|  | |  | |  | | Toshiyuki Toshito | | Dr. | | Nagoya City | |
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| **Funding Request from France** | | | | | | | | | | | | |
| **Description** | | | **€/unit** | | | **Nb of units** | | Total (€) | | Requested to[[4]](#footnote-4): | | |
| Travel to KEK for S. Incerti | | | 2500 | | | 1 | | 2500 | | IN2P3 | | |
|  | | |  | | |  | |  | |  | | |
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| Total | | |  | | |  | | 2500 | |  | | |
| **Funding Request from KEK** | | | | | | | | | | | | |
| **Description** | | | **k¥/Unit** | | | **Nb of units** | | **Total (k¥)** | | Requested to: | | |
| Travel to France | | | 300 | | | 3 | | 900 | | KEK | | |
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| Total | | |  | | |  | | 900 | |  | | |
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| **Additional Funding from France** | | | | | | **Additional Funding from Japan** | | | | | | |
| **Provided by/Requested to[[5]](#footnote-5)** | | **Type** | | **€** | | **Provided by/Requested to[[6]](#footnote-6)** | | | | **Type** | | **k¥** |
| Total | |  | |  | | Total | | | |  | |  |

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| **Summary**  **of**  **Project** | The 2015 expected activity will focus on 2 main activities:   1. **Porting of Geant4-DNA to GPU**   During 2014, the Japanese team has successfully ported for the first time **ALL** Geant4-DNA physics models to GPU, in collaboration with S. Incerti, coordinator of the Geant4-DNA project. This allowed achieving significant gain of computing performance when simulation the transport of ionising radiation at the nanometer scale. Thanks to the recruitment of Dr Shogo Okada at KEK, we would like to continue this activity in three directions:   * first, as a continuation of tests performed in 2014, we would like to compare integral physics results in terms of ranges and stopping powers which are expected to be close to international recommendations (for eg. obtained from the ICRU) * then, since new Geant4-DNA physics models are becoming available for the transport of electrons biological media (in collaboration with the University of Paul Sabatier in Toulouse, France, and with the University of Ioannina in Greece), we would like to also port these new models to GPU * finally, we would like to start to port Geant4-DNA physico-chemistry and chemistry processes and models to GPU, since the simulation of water radiolysis requires heavy computing times (usually several days). This is a complex task which might extend beyond one year.   All these developments would significantly help Geant4-DNA users to perform simulations in much shorter times.   1. **Organization of a Geant4-DNA/Geant4 workshop in Asia**   We would like to organize a Geant4/Geant4-DNA workshop at the Physics-Medicine-Biology frontier in Japan, probably at the National Institute for Radiological Science in Chiba, followed by a Geant4/Geant4-DNA tutorial. This will be organized in full collaboration with France-Vietnam (“FVPPL”) and France-Korea (“FKPPL”) Associated International Laboratories, in order to encourage collaboration between Asia countries around these activities. We recall that Dr Hoang Tran (Ton Duc Thang U., Saigon, Vietnam) is now based in Saigon and is trying to initiate Geant4/Geant4-DNA activities in Vietnam. Such a workshop would definitely help fostering interdisciplinary collaborations between Asian partners. |
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1. ID: identification, if program continuation, use previous ID; if new project, ID will be set by the TYL directors; [↑](#footnote-ref-1)
2. e.g. LAPP/IN2P3 or Irfu/CEA [↑](#footnote-ref-2)
3. e.g. IPNS/KEK or … [↑](#footnote-ref-3)
4. e.g. IN2P3, Irfu [↑](#footnote-ref-4)
5. e.g. French Embassy, other CNRS or CEA programs, PICS, European grants… [↑](#footnote-ref-5)
6. e.g. JSPS, RIKEN, Universities,….; [↑](#footnote-ref-6)