

3 - 34 Effect of γ ray Irradiation on the Root Growth of *Arabidopsis Thaliana*

Luo Shanwei, Yu Lixia, Du Yan, Feng Hui, Zhou Libin and Li Wenjian

Arabidopsis thaliana is a common research plant of molecular and cell biological research which has short life cycle and huge amount of seeds^[1]. Gamma ray is one of the important physical mutagens which is widely used in plant genetics and breeding research^[2].

The purpose of this study is to investigate the dose-effect of γ ray radiations on the root development of *Arabidopsis*. Dry seeds were irradiated by γ rays with the dose range from 100 to 1 600 Gy. Ten seeds for each treatment group were sterilized by using standard protocol and sowed on the Murashige and Skoog medium. Samples were incubated at 4 °C in dark for 48 h, and then transferred to green house under a 16 h light and 8 h dark photoperiod at (22±3) °C. Seven days later, the root length of all the samples was measured with digital camera and analyzed by ImageJ software. Experiments were repeated for three times.

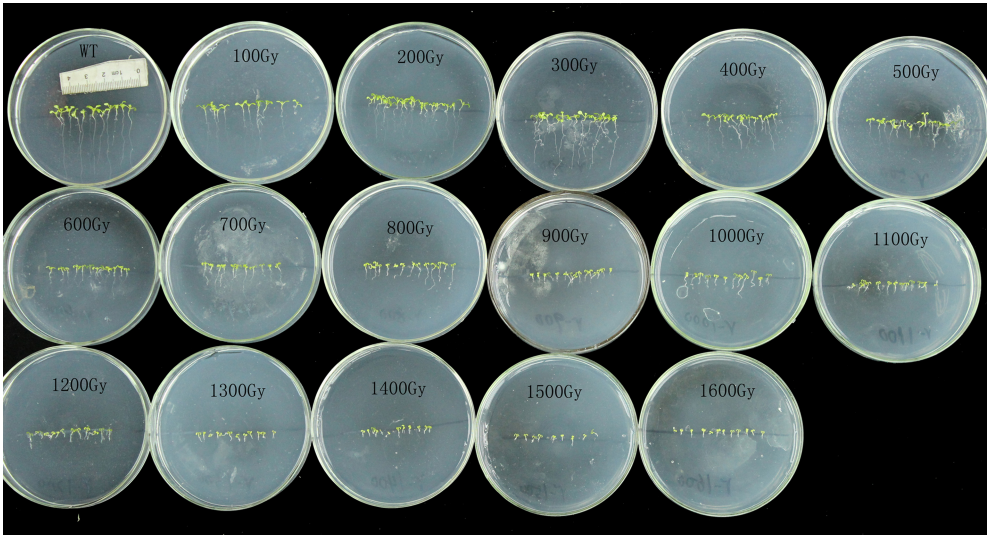


Fig. 1 (color online) Seeds germination and root development of *Arabidopsis thaliana* irradiated by γ rays.

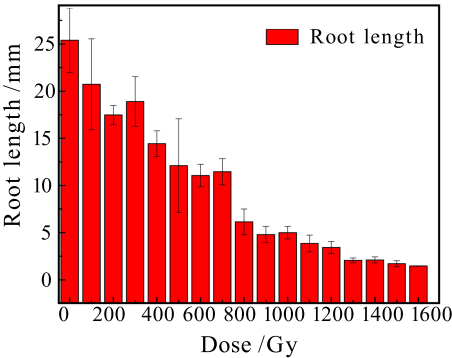


Fig. 1 (color online) Root length of *Arabidopsis thaliana* irradiated by γ rays.

In Fig. 1, it was shown that γ ray radiation had no inhibition effect on seeds germination. The seeds germination rate approached 100% irrespective of doses. With the increase of radiation dose, the root length of *Arabidopsis* was suppressed more and more severely (Fig. 2). However, the root length of samples stayed stable and didn't get even shorter when the radiation dose is beyond 1 200 Gy. The reason and mechanism why the γ ray radiation with the doses higher than 1 200 Gy still cannot inhibit the process of seeds germination need further research.

References

- [1] D. W. Meinke, Ian M. Sussex, Developmental Biology, 72(1979)50.
- [2] G. Kraft, M. Kramerand, M. Scholz, Radiat. Environ. Biophys, 31(1992)161.