cells. ΔNp73, as an antagonist to $p53/p63/TAp73$, whether and how the downregulated ΔNp73 expression affects the miRNA biogenesis in cellular response to IR remains unknown. It will be interesting to clarify the relationship of ΔNp73 expression and miRNA biogenesis in cellular response to different LET irradiation. We should pay close attention to discover the effect of different LET irradiation on $miRNAs$ expression and biogenesis and the regulatory mechanism of biogenesis employing the HIRFL (Heavy Ion Research Facility of Lanzhou, Institute of Modern Physics, and Lanzhou, China)[2].

In summary, IR-induced DSBs directly activate $p53$ or ATM phosphorylates $p53$ to mediate $miRNAs$ transcription by binding the promoter regions of $miRNA$ genes. $p53/p63/p73$ also can interact with Drosha/DGCR8 complex through $p68$ and $p72$ to enhance the $miRNAs$ expression. Whether $p53/p63/p73$ influence $miRNAs$' transportation, degradation and RISC assembly is unclear and need further investigation.

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3 - 54 DNA-PKcs Deficiency Inhibits Glioblastoma Cell-Derived Angiogenesis after Ionizing Radiation *

Liu Yang, Liu Yuanyuan, Zhang Luwei and Zhang Hong

DNA-dependent protein kinase catalytic subunit (DNA-PKcs) plays a critical role in non-homologous end-joining repair of DNA double strand breaks (DSB) induced by ionizing radiation (IR) [1]. Little is known, however, regarding the relationship between DNA-PKcs and IR induced angiogenesis; thus, in this study we aimed to further elucidate this relationship. Our findings revealed that lack of DNA-PKcs expression or activity sensitized glioma cells to radiation due to the defective DNA DSB repairs and inhibition of phosphorylated Akt Ser473. Moreover, DNA-PKcs deficiency apparently mitigated IR-induced migration, invasion and tube formation of human microvascular endothelial cell (HMEC-1) in conditioned media derived from irradiated DNA-PKcs mutant M059J glioma cells or M059K glioma cells that have inhibited DNA-PKcs kinase activity due to the specific inhibitor NU7026 or siRNA knockdown(Fig. 1). Moreover, IR-elevated vascular endothelial growth factor (VEGF) secretion was abrogated by DNA-PKcs suppression. Supplemental VEGF antibody to irradiated conditioned media was negated enhanced cell motility with a concomitant decrease in phosphorylation of the FAK^{Try925} and Src^{Try416}. Furthermore, DNA-PKcs suppression was markedly abrogated in IR-induced transcription factor hypoxia inducible factor-1α (HIF-1α) accumulation, which is related to activation of VEGF transcription.

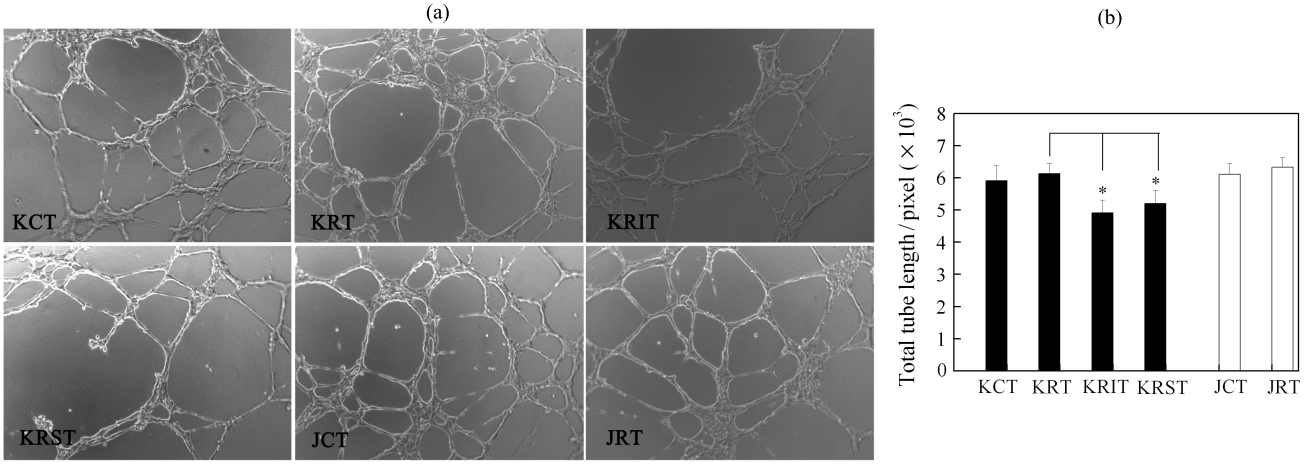

Fig. 1 Effects of conditioned media derived glioma cells with different DNA-PKcs kinase activity on tube formation. (a) Representative photographs of HMEC-1 endothelial cell culture in Matrigel (8 h). (b) Tube formation is expressed as total tube length. KCT, TCM from M059K cells; KRT, ICM from M059K cells; KRIT, ICM from M059K cells pretreated with the DNA-PKcs inhibitor NU7026; KRST, ICM from M059K cells pretreated with DNA-PKcs siRNA; JCT, TCM from M059J cells; JRT, ICM from M059J cells.

These findings, taken together, demonstrate that depletion of DNAPKcs in glioblastoma cells at least partly suppressed IR-inflicted migration, invasion, and tube formation of HMEC-1 cells, which may be associated with the reduced HIF-1α level and VEGF secretion. Inhibition of DNA-PKcs may be a promising therapeutic approach to enhance radio-therapeutic efficacy for glioblastoma by hindering its angiogenesis.

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3 - 55 Study of Heavy Ion Radiation on Cognitive Function in Mouse Brain*

Yan Jiawei, Liu Yang and Zhang Hong

Radiotherapy can not only kill tumor cell, but also damage the nearby normal tissues and cells. We aim to assess the long-term effect on cognitive function induced by heavy ion radiation for protecting the normal tissue effectively during/after radiotherapy of brain tumor.

In order to determine the influence of different doses of carbon-ion radiation, our experiments were carried out on 36 male Kunming mice, divided into 4 groups, each of 6 mice, including control and radiation groups (0.5, 1, 2 Gy), respectively, and with 4 months feeding after irradiation. Passive avoidance task in the apparatus is used for evaluation of emotional memory based on contextual fear conditioning in mice[1]. After warning signal (lighting and sound), light rooms will applied a 40 V, 1.5 mA constant-current shock per 5 s. If the mice didn't enter to the dark room in 5 s after warning, they will be get electric shock until they entered and the same process occurs in per 2 min. After 5 d and totally 75 times training, the experiment was beginning in the same condition. The following parameters were measured as the number of unconditioned responses (escapes) and latency of reactions in the passive avoidance tests[2].

The results showed that there were no significant differences in the number of unconditioned responses between the 1.0 Gy irradiated group and the control group. However, a significant increase in the value of the number of unconditioned responses was observed in the 2.0 Gy irradiated group, accompanied with the improved average number of unconditioned response. Our data suggested that higher-dose irradiated group impaired cognitive performance.

Table 1 The number of unconditioned responses (escapes).

Group	Unconditioned response					Average	P
Control	7	6	5	2	7	5.4	
1 Gy	8	6	7	10	9	8	0.056 3
2 Gy	9	7	11	10	7	8.8	0.024 1 *

Table 2 The latency of reactions.

Group	Latency of reactions					Average	P
Control	35	25	40	30	65	39	
1 Gy	45	55	50	35	50	47	0.331 9
2 Gy	165	90	55	40	60	80	0.102 7

*$P < 0.05$. Treatment group vs Control group

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