Ionizing radiation is used widely to treat many conditions including cancer, arteriovenous malformations, macular degeneration, and intimal hyperplasia. Patients are often treated with radiotherapy, drug-therapy or a combination of both. In most cases, using modern clinical radiotherapeutic techniques, radiation damage can be limited to a core of diseased tissue and the immediate normal tissue surrounding it. Similarly, it would be ideal for a drug or a gene to be delivered only to the diseased tissue and not to healthy tissue. We have developed a technology by which the radiation induced up-regulation of an endothelial cell adhesion molecule(s) within the diseased tissue is used as a target to deliver therapeutic agents (drugs, genes, etc.) selectively to the site of disease. Possible application of this promising technology for delivering pro-angiogenic compounds to post-infarct myocardial tissue will also be discussed.

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