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BRAF addiction of thyroid cancers makes them therapeutically vulnerable

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Papillary carcinoma is the most common form of thyroid cancer. Approximately one quarter of these carcinomas have mutations in the BRAF gene. The prevalence of such mutations is even greater in high-grade carcinomas, particularly those that are refractory to standard treatment, which is radioactive iodine (RAI). A team of researchers led by James Fagin, at Memorial Sloan-Kettering Cancer Center, New York, has now identified a way to potentially exploit the expression of BRAF by such cancers for therapeutic purposes.

Despite the prevalence of BRAF mutations in papillary carcinoma it has remained unclear how dependent thyroid cancers are on BRAF expression. Fagin and colleagues first showed that thyroid tumors in mice expressing one of the most commonly detected BRAF mutations in human papillary thyroid carcinomas were exquisitely dependent on BRAF for viability. Of therapeutic significance, treating thyroid tumor–bearing mice with drugs that inhibited the BRAF signaling pathway rendered the tumor cells susceptible to a therapeutic dose of RAI. Fagin and colleagues therefore suggest that their data provide rationale for clinical trials testing whether such drugs can restore the efficacy of RAI therapy in patients with papillary thyroid carcinomas expressing BRAF mutations.

More information: Small-molecule MAPK inhibitors restore radioiodine incorporation in mouse thyroid cancers with conditional BRAF activation, *Journal of Clinical Investigation.*

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