**Supplementary Figure 1. Patients with new iodine uptake after four weeks of dabrafenib**. *Left two panels*: anterior and posterior images of the chest after 148 MBq iodine-131 on Day 25 after dabrafenib in six patients. *Right two panels:* the same images on Day 42 after 5.5 GBq iodine-131.

**Supplementary Figure 2. Percent radioiodine uptake by region, all patients.** The first number on the axis refers to the patient, the second to individual regions of uptake in each patient.

**Supplementary Table 1. Summary of Patient Study Data.**

**Supplementary Table 2. Spot Urine Iodide Measurements.**

**Supplementary Table 3. Serum TSH values.**