TABLE 2. ^{131}I IN HUMAN GONADAL TISSUE OF SINGLE I.V. ADMINISTRATION AFTER ^{131}I-19-IODOCHOLESTEROL

	(% kg dose/gm)			
Time	Testes	Ovaries	Pt	Diagnosis
8 days	0.024	—	GH	Prostatic carcinoma
16 hr	0.14	—	CB	Prostatic carcinoma
24 hr	0.11	—	JR	Prostatic carcinoma
2 days	—	0.006	PD	Cervical carcinoma
2 days	—	0.230	MN	Cervical carcinoma
21 days	—	0.007	MM	Leiomyoma uteri
20 hr	—	0.210	VS	Nabothian cysts

TABLE 3. SUMMARY OF ESTIMATED ABSORBED DOSE (RADS/mCi) OF ^{131}I FROM SINGLE INTRAVENOUS ADMINISTRATION OF ^{131}I-19-IODOCHOLESTEROL

Tissue*	Absorbed dose† (rads/mCi)
Total body	0.94
Adrenals	30.0‡
Testes	2.01
Ovaries	2.88
Liver	1.38

* All tissue data from humans except liver which has been extrapolated to man as described.
† Assumes instantaneous uptake of maximum concentration observed.
‡ Assumes 0.4% of administered activity in adult adrenals.

late percent kilogram dose per gram to other species, (B) calculate absorbed radiation doses with this unit without additional regard for species, and (C) any value greater than 0.1% kg dose/gm reflects tissue concentration of a drug greater than that evident by general distribution.

To calculate the absorbed radiation dose from the units described above according to the MIRD scheme (Eq. 2)

$$\bar{D} = \tilde{C} \sum_i \Delta_i \phi_i \qquad (2)$$

the percent kilogram dose per gram must be divided by 70 kg to give percent dose per gram. This, in effect, is identical to normalizing the data as described by Dr. Blau. Therefore,

$$C(t) = \frac{\%\ \text{kg dose/gm}}{(70\ \text{kg})\,(100\%)} \qquad (3)$$

And the cumulative concentration is

$$\tilde{C} = (\mu\text{Ci dose}) \int_0^\infty C(t)\,dt \qquad (4)$$

Thus, as indicated, appropriate tissue concentration data can be used to calculate absorbed radiation doses.

We agree with Dr. Blau that it is the total accumulated radioactivity in an organ that is needed for complete radiation absorbed dose estimated. The concentration unit should only be used when the target and source organ are the same. The total cumulative radioactivity in a human organ can be determined from percent kilogram dose per gram units by

$$\tilde{A}_o = \mu\text{Ci dose} \int_0^\infty \frac{\%\ \text{kg dose/gm}}{(70\ \text{kg})\,(100\%)} [\text{organ wt in gm}]\,dt \qquad (5)$$

where organ weight is representative of standard man. Thus, absorbed radiation dose estimates can be ascertained using total activity or concentration providing the right units are used with an understanding of their limitations.

Using the parameters from our original preliminary communication and human gonadal tissue concentrations (Table 2) we wish to report our current dose estimate for ^{131}I-19-iodocholesterol (Table 3).

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RETENTION OF ^{99m}Tc-SULFUR COLLOID IN THE LUNGS

We read with interest the letter of Per Brunn (*1*) and the reply by Klingensmith (*2*). It was shown by Turner, et al (*3*) and others (*4–6*) that lung uptake of ^{99m}Tc-sulfur colloid during liver-spleen scanning is not due to flocculation either before or after injection.

The theory of Klingensmith (*2*) that the amount of lung uptake of ^{99m}Tc-sulfur colloid may be an index of the number of circulating macrophages as long as blood clearance is in the normal range looks attractive. This hypothesis was negated by the autopsy findings on a patient with lymphosarcoma and hepatic cirrhosis who showed lung uptake of ^{99m}Tc-sulfur colloid when a liver-spleen scan was done 1 month prior to his death (*3*). After a thorough discussion, it was postulated that in certain patients,

because of pathophysiologic reasons, most or part of the ^{99m}Tc-sulfur colloid administered might aggregate into macromolecules that would then be trapped in the lungs (*3*).

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THE AUTHOR'S REPLY

None of the studies of increased lung uptake of ^{99m}Tc-sulfur colloid published so far conclusively excludes or establishes increased phagocytosis or macroaggregation as the responsible mechanism. As previously discussed (*1*), data from three studies using ^{99m}Tc-sulfur colloid favor increased phagocytosis (*2–4*). On the other hand, animal studies using colloidal carbon in comparatively large amounts have shown that burns and factors that promote coagulation increase the uptake of colloidal carbon in the lungs whereas heparin prevents this increased uptake (*5,6*).

The report by Turner, et al does not negate the phagocytic hypothesis since the autopsy was done 1 month after the demonstration of increased lung uptake of ^{99m}Tc-sulfur colloid and there is evidence for rapid interchange (within minutes) between the marginated macrophage pool and the circulating macrophage pool (*7*). Therefore, macrophages present in the pulmonary capillary bed at the time of the liver-spleen study may not have been present at the time of autopsy. In addition, macrophages can be difficult to identify histologically (*8*). Thus, further research will be necessary to determine the mechanism(s) responsible for increased lung uptake of ^{99m}Tc-sulfur colloid.

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SCINTIGRAPHIC APPEARANCE OF NECROTIC LIVER METASTASIS IDENTICAL WITH THAT OF AMEBIC ABSCESSES

Concerning the diagnostic possibilities of gallium scanning of the liver, George F. Geslien, et al recently described the scintigraphic image of acute amebic abscesses. The same tracer distribution, however, can be found in other liver lesions as we ascertained in one of our patients. The striking similarity of the scintigraphic image with that of amebic abscesses encouraged us to report this case.

A 43-year-old woman presented with pain in the right hypochondrium with moderate fever of a few weeks' duration. Physical examination demonstrated hepatomegaly with palpable nodules. The liver function test showed elevated alkaline phosphatase and bilirubin values. The results of the immunoelectrophoresis were compatible with an infectious or parasitic process. Laparoscopic exploration showed hepa-