Results and discussion. Quantitation of proliferative cell activity (table) yielded 2.67 cpm per crypt (wet wt). This figure can be used for further quantitation since dry vs wet weights have no bearing on this number. The cpm per mg data was 1.01×10^4 dry wt and $1.60 = 10^3$ wet wt. Proliferative cells per mg were calculated to be $1.71 = 10^5$ dry wt and $2.71 = 10^4$ wet wt. The data between these groups are consistent since the number of proliferative cells per crypt is $4.5 = 10^1$ for both dry and wet parameters.

Our calculations on the quantitation of proliferative activity of the intestine give figures which are lower by at least a power of ten than those of Hagemann et al.[10] for the mouse. This difference was true for both dry and wet weights. There was a substantial difference in sampling since our samples consisted of mucosal scrapings only and did not include the muscle layer. Elimination of the weight of the muscle layers which take up little ^{3}HTdr would result in a higher uptake per mg in animals with the same proliferative rates. Our figures are nevertheless lower and thus indicate a substantial decrease in proliferative activity in the gerbil gut.

Two factors which may affect the various parameters were analyzed: age and diurnal variation. Both variables were carefully monitored. Crypt size might also affect the cpm/mg determination, since the gerbil's crypt size is 181 cells as compared to 450 in rats[13] and 500 in mice[14].

The gerbil, *Meriones unguiculatus,* is an important addition to cell kinetic modeling. It has been useful in grafting experiments, and may provide a base for the establishment of a number of new transplantable tumor lines. The gerbil has been shown to have high radioresistance[11,12] and an extremely slow intestinal transit time[7-9].

The slower proliferative activity in the small intestine of the gerbil may prove useful in models for studies on the small intestine and on radioresistance.

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2 S.I. Magalini, A.H. Handler and G.P. Mascioli, Fedn Proc. *24,* 437 (1965).
3 A.H. Handler, S.I. Magalini and D.Pav, Cancer Res. *26,* 844 (1966).
4 H. Haas, J. Hilfrich, N. Knoch and U. Mohr, J. natl Cancer Inst. *55,* 637 (1975a).
5 H. Haas, N. Knoch, U. Mohr and A. Cardesa, Z. Krebsforsch. klin. Onkol. *83,* 233 (1975b).
6 R.E. Billingham and W.K. Silvers, Scient. Am. *208,* 118 (1963).
7 J.M. Nelson, Ph.D. thesis, University of Michigan, Michigan 1969.
8 J.M. Nelson, Radiat. Res. *43,* 367 (1972).
9 C.P. Sigdestadt, A.M. Connor and O.R. Czerwonka, Experientia *30,* 344 (1974).
10 R.F. Hagemann, R.F. Sigdestadt and S.W. Lesher, Cell Tissue Kinetics *3,* 21 (1970).
11 R.J. Flynn, ANL Biological and Med. Res. Semiannl. Rept. (ANI-5841), 31 (1957).
12 M.C. Chang, D.M. Hunt and C. Turbyfill, Nature *203,* 536 (1964).
13 D.G. Bader and A.F. Hopper, Radiat. Res. *34,* 555 (1968).
14 F. Devik, Acta radiol. ther. *10,* 129 (1971).

Brain prostaglandin content in rats sacrificed by decapitation vs focused microwave irradiation

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Summary. Our experiments have shown that using microwave irradiation to sacrifice the animals prevents further post-mortem synthesis of prostaglandins in the rat brain.

In this preliminary study the possible correlation between total prostaglandin E and E_2 contents have been evaluated in rat brain hypothalamus after decapitation in comparison to the basal values obtained by using the microwave technique for sacrificing animals.

Male Sprague-Dawley rats (250-350 g) were anesthetized with sodium pentobarbital (50 mg/kg i.p.) to avoid possible effects on prostaglandin content caused by the brief immobilization stress that occurs in the microwave technique (Poddubiuk, unpublished results) and killed between 02.00 h and 14.00 h by decapitation with a guillotine at 24 °C or by microwave radiation by focusing the microwave radiation on the head for 5 sec (5 kW; 2450 MHz, General Medical Engineering, Peabody, Mass.). Brains were removed and placed on an ice-cooled plate for dissection. Hypothalami were used for further procedures. Prostaglandins were extracted by homogenizing 200 mg of tissue in a mixture of 1 ml 0.9% saline and 0.4 ml 0.1 N HCl at 40 °C. The homogenate was then extracted with 2.6 ml of ethyl acetate:isopropanol (1:1; vol:vol)) for 15 min with constant shaking. The ethyl acetate phase was separated by the addition of 3 ml 0.9% saline and 2 ml ethyl acetate. Following centrifugation at 1000-2000 × g the upper ethyl acetate phase was removed, evaporated under a stream of nitrogen, dissolved in 0.2 ml benzene:ethyl acetate:methanol (60:40:10; vol:vol:Vol) and stored at −20 °C. The radioimmunoassay procedure was performed as previously described[2].

The analysis of our experimental data (table) indicates that prostaglandin content in brain is differentially affected by

Total prostaglandin and E_2 content in hypothalamus[a] of rats sacrificed by microwave irradiation and by decapitation

	Method killed	
	Guillotine	Microwave irradiation
Brain total PGE content (ng/200 mg tissue)	33 ± 6.8	20 ± 5.4
Brain PGE_2 content (ng/200 mg tissue)	24 ± 3.8	12 ± 3.0*

[a] Each sample is a pool of the hypothalami from 3 rats. Results are mean values (± SE) for 8 rats. Significance expressed as *$p < 0.05$.

different ways of sacrificing the animals. Our results support the observations made by Bosisio et al.[3] and Guidotti et al.[4] who used microwave irradiation to avoid changes in prostaglandin and cyclic nucleotide levels in animals. Microwave irradiation exposure is known to stop post mortem changes of brain ACh and CH[5-7] and enzymatic activities[3].

The employment of microwave irradiation instead of decapitation seems to stop post-mortem changes in prostaglandin contents (especially PGE_2 content) of the hypothalamus of the rat and makes the values measured by radioimmunoassay technique as well as others more reliable and accurate. Whether our observations of prostaglandin content changes can be extrapolated to all areas of the brain is uncertain. They suggest that the rapid increase in brain temperature during microwave irradiation alters post-mortem biosynthesis of these compounds. Further studies are required to clarify the above problem.

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2 P.D. Lambert, R.C. Nealeigh and M. Wilson, J. Microwave Power *7*, 367 (1972).
3 E. Bosisio, C. Galli, G. Galli, S. Niciosia, C. Spagnuolo and L. Tosi, Prostaglandins *11*, 773 (1976).
4 A. Guidotti, D.L. Cheney, M. Trabucchi, M. Doteuchi, C. Wang and R.A. Hawkins, Neuropharmacology *13*, 1115 (1974).
5 B.McL. Breckenridge, Proc. natl Acad. Sci. USA *52*, 1580 (1969).
6 F. Dray, B. Charbonnel and J. Maclouf, Eur. J. clin. Invest. *5*, 311 (1975).
7 S.S. Pong and L. Levine, in: Prostaglandins, p. 41. Ed. P.W. Ramwell. Plenum Press, New York 1977.

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