

## RNA content and growth rate

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### Recommended Citation

Alberghina, F. A., and E. Sturani (1971) "RNA content and growth rate," *Fungal Genetics Reports*: Vol. 18, Article 9. <https://doi.org/10.4148/1941-4765.1888>

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## **Abstract**

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Alberghina, F. A. M. and E. Sturani. R N A  
 content and growth rate in Neurospora crassa mycelium.

To study the **regulation** of RNA synthesis in N. crassa, preliminary **experiments** have been conducted **on the relationship** between the RNA **content** and the **rate** of growth of exponentially growing mycelio (collected in mid-exponential phase).

As shown in Table 1, cultures with quite different growth rate constants **are obtained** by changing either the composition of the medium or the incubation temperature. At any fixed **temperature**, the RNA content is greater **for** the foster growing mycelio: **a** linear relationship may be found between the log of the RNA content and the **rate** of growth. When the **rate** of growth is enhanced by **increasing** the **temperature**, the RNA content is not affected, or **may** even slightly decrease.

Table 1. RNA content of N. crassa mycelio in exponential **phase** of growth.

Culture medium	Temperature	Growth rate constant	RNA content
complete + sucrose	25°C	0.32 hr <sup>-1</sup>	137
	30	0.38	130
	37	0.44	112
minimal + sucrose	25	0.27	98
	30	0.32	95
	37	0.35	98
minimal + glycerol	25	0.16	63
	30	0.19	69
	37	0.20	54

Experimental condition\*: minimal = Vogel's minimal medium; complete = Vogel's minimal supplemented with 1 g casein hydrolysate (not vitamin-free), 10 mg yeast RNA, 5 mg inositol, 15 mg DL-tryptophan, 15 mg L-asparagine / 100 ml medium. Final conc. of carbon source = 2% (w/v). 200 ml medium / 750 ml flask. Inoculum was 10<sup>6</sup>/ml 7 day old conidio of wild type ST74A. Flask were shaken in Dubnoff water bath at 100 rpm. Growth rate constant was determined according to Baig and Hopton (1969 J. Bacteriol. 100:552). RNA content was determined on lyophilized mycelio according to Lurk, Williams and Kennedy (1968 J. Biol. Chem. 243:2618). Data are averages of three independent determinations.

These results suggest that the relationship between the rate of RNA synthesis and the rate of growth in *N. crassa* follows a pattern very similar to the one observed in bacteria. • • • Institute of Plant Sciences, C. N. R. Unit for Cell and Molecular Biology in Plants, University of Milan, Milan, Italy.