

Further considerations on the intranuclear distribution of HMGI/Y proteins

Giovanna Tabellini¹, Massimo Riccio², Giovanna Baldini¹, Renato Bareggi¹, Anna Maria Billi³, Vittorio Grill¹, Paola Narducci¹ and Alberto M. Martelli^{3,4,5}

¹ Dipartimento di Morfologia Umana Normale, Università di Trieste, Trieste, Italy

² Laboratorio di Biologia Cellulare e di Microscopia Elettronica, Istituto di Ricerca Codivilla Putti, Bologna, Italy

³ Dipartimento di Scienze Anatomiche Umane e Fisiopatologia dell'Apparato Locomotore, Sezione di Anatomia Umana, Università di Bologna, Bologna, Italy

⁴ School of Pharmacy

⁵ Istituto di Citomorfologia Normale e Patologica del CNR, c/o IOR, Bologna, Italy

Key words: HMGI/Y proteins, immunofluorescent staining, nucleus, co-localization, confocal laser scanning microscope, RNA transcription

SUMMARY

We have investigated the intranuclear distribution of High-mobility group proteins I/Y by means of immunofluorescent staining employing a variety of cell lines. Confocal scanning laser microscopy analysis revealed that High-mobility group proteins I/Y are present in an intranuclear fibrogranular network and mitotic chromosomes. In Caski, C4I, Flow 2002, and K562 cell lines, High-mobility group proteins I/Y were absent from nucleoli, whereas in HeLa cells they were present in this nuclear domain. Double immunolabeling studies showed that High-mobility group proteins I/Y co-localize with other key nuclear components such as NuMA, SC-35, and TAF_{II}70. Nuclear reactivity for High-mobility group proteins I/Y dramatically decreased in apoptotic nuclei of HL-60 human leukemia cells. Our morphological data correlate well with previous biochemical and functional findings obtained by other investigators, who have demonstrated multiple roles for this class of polypeptides. However, they point to the likelihood that High-mobility group proteins I/Y are involved in as yet unidentified functions, most likely in the speckle domains of the nucleus. They also show that conceivably these proteins are also involved in apoptosis.