

Elisabeth Gantt

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Department of Cell Biology and Molecular Genetics
University of Maryland
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Born Gakovo, Yugoslavia 11-26-1934, U.S. Citizen

Education:

Blackburn College, Carlinville, Illinois, 1954 - 58 B.A.
Northwestern University, Evanston, Illinois, 1958 - 60 M.Sc.
Northwestern University, Evanston, Illinois, 1960 - 63 Ph.D.

Positions Held:

Currently guest researcher in Biology Dept., Roanoke College, Salem VA.
Distinguished Professor Emerita, Dept. CBMG, Univ. Maryland August 2007 to present.
Professor, Plant Biology Dept., Univ. Maryland, Dec. 1988-Aug. 1996.
Biologist Smithsonian Institution 1966-1988.
USPHS Postdoctoral Fellow, Dept. Microbiol., Dartmouth Med. School, Hanover, NH 1963-1966.
NIH Predoctoral Fellow, Dept. of Biol. Northwestern University 1961-1963.

Special Honors:

Fellow of American Association for the Advancement of Science, 1982.
President [first female] - American Society of Plant Physiologists, 1988-89.
National Academy of Sciences Award - G.M. Smith Medal, 1994.
National Academy of Sciences - Elected member 1996.
Stephen Hales Award, American Soc. Plant Biology, 2002-2004
Kettering Award Committee, Amer. Soc. Plant Biology, 2005-2010
Elected Fellow of the American Society of Plant Biologists, 2007
Honorary degree, Doctor of Science, Roanoke College, VA, 2016

Major Research Interests:

As a plant biologist, she studied the structure of the photosynthetic apparatus in plant cells, which is fundamental for converting solar energy into chemical energy, upon which virtually all life depends. By being the first to isolate novel pigment protein complexes (phycobilisomes) and demonstrated that in red algae and cyanobacteria they consisted of 2-3 principal bilin-type pigments that absorb light energy largely in the visible region where chlorophyll absorption is minimal. Phycobilisomes in red algae and cyanobacteria occur on the stromal side of the thylakoids and feed light energy into the photosystems. Although she showed that in the cryptophyte algae the phycobiliproteins occur in the intrathylakoidal lumen. Concomitantly, her laboratory had also investigated the carotenoid production in several simple algae across several phylogenetic lines.

Presently, after the required closing of her UMCP laboratory, she is pursuing the differential accumulation of carotenoids in cryptophytes dependent on salinity conditions.

Selected Publications:

Gantt, E., and S.F. Conti. 1966. Phycobiliprotein localization in algae. *Brookh. Symp.*, 19:393-405.

Gantt, E., M.R. Edwards, and L. Provasoli. 1971. Chloroplast structure of the Cryptophyceae: Evidence for phycobiliproteins within intrathylakoidal spaces. *J. Cell Biol.* 48: 280-290.

Gantt, E., and C.A. Lipschultz. 1973. Energy transfer in phycobilisomes from phycoerythrin to allophycocyanin. *Biochim. Biophys. Acta* 292: 858-861.

Canaani, O.D., C.A. Lipschultz, and **E. Gantt**. 1980. Reassembly of phycobilisomes from allophycocyanin and a phycocyanin-phycoerythrin complex. *FEBS Letters* 115: 225-229.

Mustardy, L., F.X. Cunningham, and **E. Gantt**. 1992. Photosynthetic membrane topography quantitative in situ localization of photosystems I and II. *Proc. Natl. Acad. Sci., U.S.A.* 89: 10021-10025

Wolfe, G.R., F.X. Cunningham, D. Durnford, B.R. Green and **E. Gantt**. 1994. Evidence for a common origin of chloroplasts light-harvesting complexes of different pigmentation. *Nature* 367: 566-568.

Sun, Z., F.X. Cunningham, and **E. Gantt**. 1996. Cloning and functional analysis of the β -carotene hydroxylase of *Arabidopsis thaliana*. *J. Biol Chem.* 271: 24349-24352.

Sun, Z., F.X. Cunningham and **E. Gantt**. 1998. Differential expression of two isopentenyl pyrophosphate isomerases and enhanced carotenoid accumulation in a unicellular chlorophyte. *Proc. Natl. Acad. Sci. (USA)* 95: 11482-11488.

Cunningham, F.X. and **E. Gantt** 1998. Genes and enzymes of carotenoid biosynthesis in plants. *An. Rev. Plant Physiol. and Plant Molecular Biology.* 49: 557-583.

Cunningham, F.X., and **E. Gantt**. 2000. Identification of multi-gene families encoding isopentenyl diphosphate isomerase in plants by heterologous complementation in *E. coli*. *Plant and Cell Physiol.* 41: 119-123.

Ershov, Y. R.R. Gantt, F.X. Cunningham, and **E. Gantt**. 2000. Isopentenyl diphosphate isomerase deficiency in *Synechocystis* sp. Strain PCC6803. *FEBS Letters.* 473:337-340.

Cunningham, F.X., Jr. and **E. Gantt**. 2001. One ring or two? Determination of ring number in carotenoids by lycopene ϵ -cyclase. *Proc. Natl. Acad. Sci. (USA).* 98: 2905-2910.

Cunningham, F.X. and **E. Gantt**. 2005 A study in scarlet: enzymes of ketocarotenoid biosynthesis in the flowers of *Adonis aestivalis*. *Plant Journal.* 41: 478-492.

Gantt, E. 2013. Benefits of an Inclusive US education System. *Annual Rev. Plant Biology.* 64:1-17.