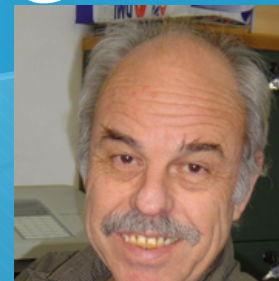


On behalf of all of us gathered at the 7th International Meeting on “Photosynthesis Research for Sustainability-2016” I honor you Dear Nathan Nelson and Dear Nejat Veziroglu with respect and love for the science, as well as the culture, that you both have given us

Nathan Nelson (Professor Emeritus, Tel Aviv University) and **T. Nejat Veziroglu** (President of International Association for Hydrogen Energy)

Govindjee (e-mail: gov@illinois.edu)



11:30 AM, June 19, 2016

I begin with Nathan as I have known him longer than I have known Nejat. There are almost 150 Nathan Nelson's on the Face Book, but none of them is our Nathan!

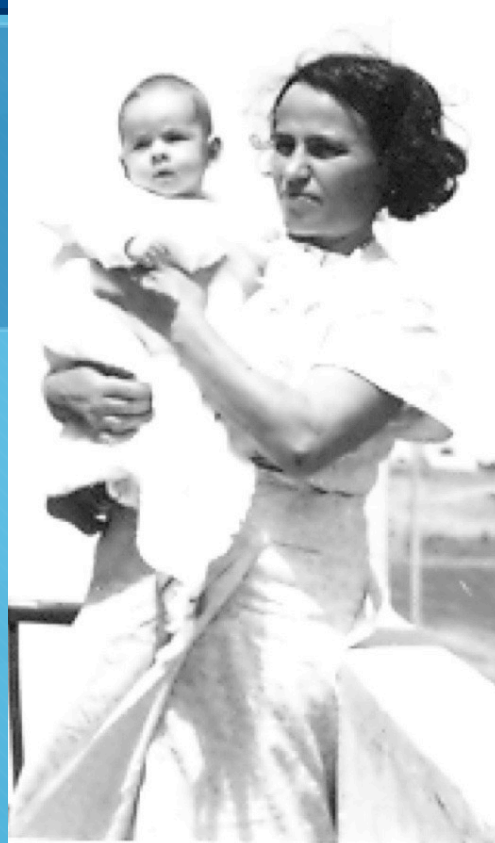
When I searched images of Nathan, through our good friend "Mr. Google" , I found only 3 photos, 2 are shown below ! He surely is smiling; let us see how he was when he was a child



Nathan Nelson was born on January 1, 1938 to Moshe and Genia in Avihayil, Isreal (Source: Nelson family archives)



Father Moshe, who, in 1918, had immigrated to Israel as a soldier in the Jewish Legion



Mother Genia holding baby Nathan



Nathan, named after mother's father, was a happy boy and remains so today (June 19, 2016)

**Nathan
Weds
Hannah,
a classmate
at Tel Aviv
University**

What did you
say to her? See
was listening
very carefully.
Is it the same
now?



We know that Nathan is a genius, a major discoverer, and a highly distinguished authority in the area of biochemistry & molecular biology; he is one-of-a-kind --unmatched in dedication to science as well as culture associated with it.

Nathan: Did you loose something? You will hear from Bill Cramer at 2:30 PM today!

**Bill Cramer:
Cytbf lover**

**Bob Blankenship:
All system lover**



Photo by Govindjee, 2010

I guess you found it. What was it? Oh! Well nothing.. Just some chinese noodles; I was wondering if we can use it to get 1.5 A resolution of Cyt b6f structure, he said. Really?

John
Golbeck:
PSI lover

We will hear
from
John at 3:50
PM
today

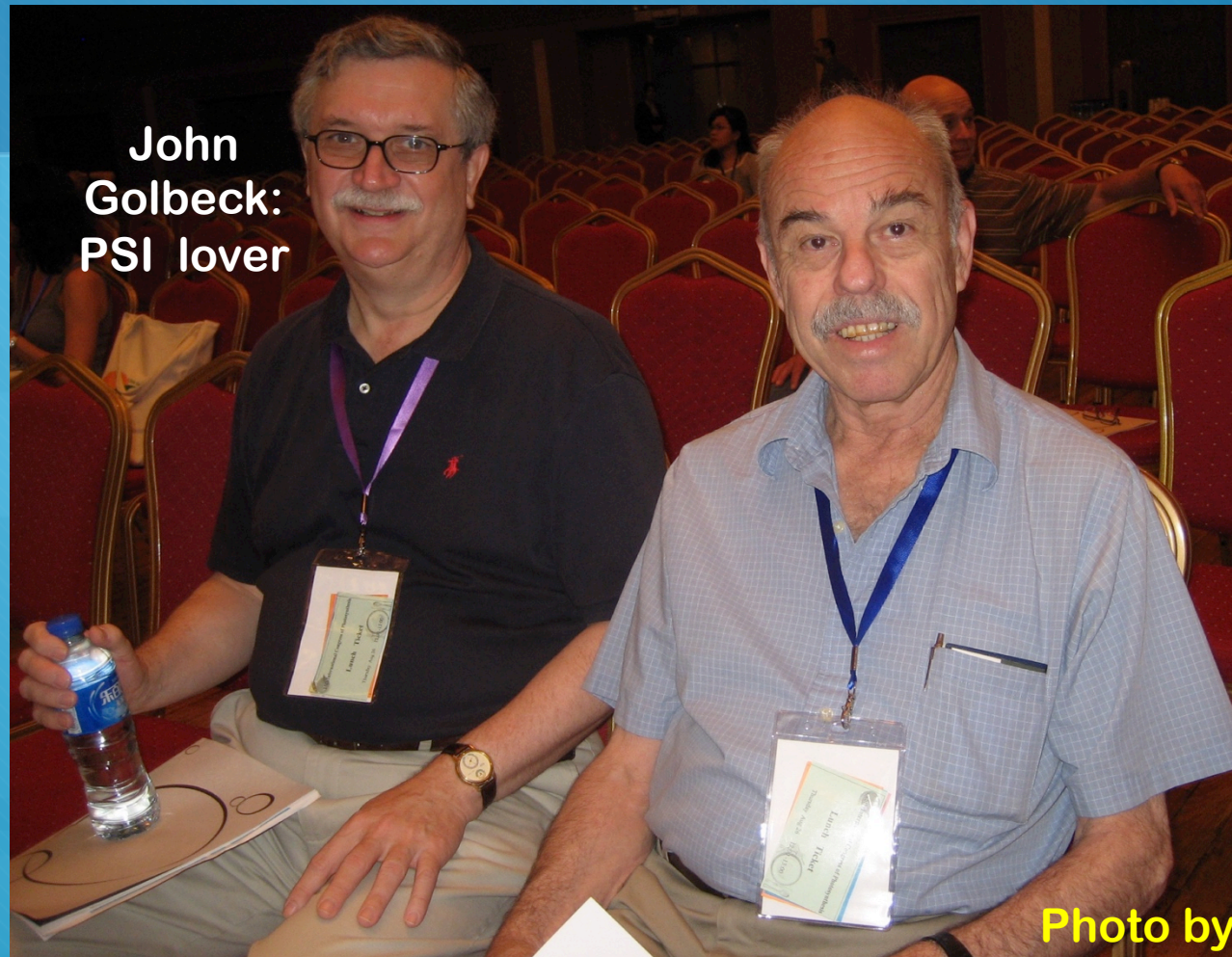


Photo by Gov

A bit more about Nathan Nelson



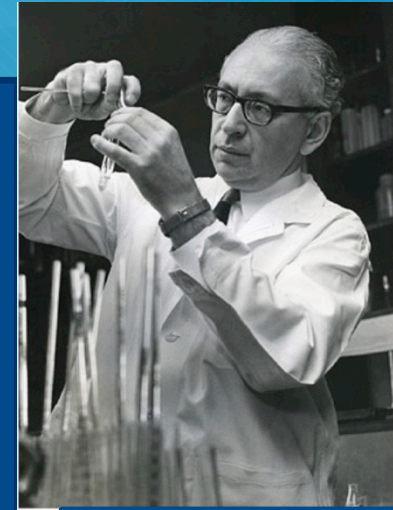
Prof. Elazar Kochva

- ◆ **1957- 1959: Nathan served as a paratrooper in the Israeli Army. After the army Nathan took care of their farm in Avihayil, raising cattle and sheep but mainly cultivating citrus trees.**
- ◆ **In 1961, his former elementary and high school teacher, Prof. Elazar Kochva persuaded him to leave the farm to study at the then newly established Tel Aviv University. So, he did quite well..**
 - **1965: B.Sc. (Biology), TelAviv University**
 - **1966: M.Sc. (Plant Physiology), TelAviv University**
 - **1970: Ph.D.(Plant Biochemistry), TelAviv University under Professor J. Neuman**

A bit more about Nathan Nelson

- ◆ **1970-1972:** Postdoc with Professor Efraim Racker at Cornell
- ◆ **1972—1985:** Senior Lecturer, Associate Professor, and Professor, TECHNION, Haifa, Israel [1978-1979)
- ◆ **1985—1995:** Department of Biochemistry, Roche Institute of Molecular Biology, Nutley, NJ
- ◆ **1995—2006:** Professor, Department of Biochemistry, Tel Aviv University, Tel Aviv, Israel
- ◆ **2005- 2011:** Founder and Director, The Daniella Rich Institute for Structural Biology

His main interest always was and remains his research, which he continues to perform 7 days a week mainly on the lab bench. And Wow! He will speak today at 2 PM on: “Half century of scientific wandering and the –Freedom, Serendipity and Joy”



Ef Racker, at Cornell, post doc advisor

However, a Glimpse of Nathan's Research (Source: Isreal Prize of Life Sciences, 2013)

Harnessing oxygenic photosynthesis for sustainable energy production is his major goal.

- ❖ **V-ATPase** : Discovery that yeast can overcome the constraints of “non-function” of V-ATPase when living in high acidity.
- ❖ **Neurotransmitter Transporters**: Nathan played an important role in the discovery of the first gene for the GABA transporter, which is a neurotransmitter but also an amino acid.
- ❖ **Metal-ion transporters**: His research explained the mechanism of action of the resistance and sensitivity towards mycobacteria in mice that causes leprosy and TB in humans.

- ✓ Among his major contributions in **photosynthesis**, I emphasize the atomic level crystal structure of plant PSI with his students Adam Ben-Shem and Alexey Amunts.
- ✓ Together with Gunter Hauska, his discovery of homodimeric Photosystem I has been a corner stone for the suggestion for the common evolutionary origin of all reaction centers.



Hauska



A Quiz

How many have worked with Nathan, or shall we say how many he has worked with? The answer seems to be a World Record in our field!

I will indeed “flash through” an alphabetical, incomplete, and may-be mistyped list of last names of coauthors of Nathan Nelson.. It will be quick..

- Almost 300 coauthors !
- And the winner is the alphabet “S” (34)
- The runner-up is the alphabet “L” (24); below it are: M (22); H (19); C (18); B (17) & A, K, O and P (16 each);
- The looser is the alphabet “Q” (zero)

The next lowest alphabets are: X (1); I (3); E, Y and Z (4 each)

Abdel-Ghany; Aceto; Adelson; Alfonzo; Alperovitch-Lavy; Alperovitch; Alt; **Amunts**; Andersson; Anholt; Aro; Asahi; Assirati; Atamaa-Ismaeel; Aviezer-Hagai; Azzy; Becker; Beja; Beltran; Ben-David; **Ben-Shem**; Ben-Tal; Bengis; Binder; Betz; Bolvig; Born; Borovikova; Borst; **Bottomley**; Brown; Broza; Buenemann; Buttner; Callahan; Cammack; Carmeli; Chen; Chibovsky; Chimelli; Chitnis; Chojnicki; Chor; Cidon; Claudio; Cohen-Kfir; Cohen; Condrescu; Conroy; **Croce**; Culotta; Czyzyk; Danbolt; Danho; Davidson; Dehnes; Deters; Deutzmann; Dreschler; Drgon; **Drory**; Edelman; Edwards; Eskandari; Evans; Eytan; Faich; Falch; Feiler; Fox; Frankenberg; Fried; Frolow; Frolund; **Fromme**; Fuhrmann; **Fujita**; Fukui; Furtinger; Futai; Geps(h)tein; Gerber; Getz; Gitler; Glaser; Gluck; Gomez; Gonen; Gong; Greenberg; Gregor; Grossman; Guastella; Gutnick; Hagai; Hager-Braun; **Hall**; Hamill; Harvey; Hattori; Hauska; Hay; Haynes; Hediger; Heilman; Hermans; Herold; **Herrmann**; Hess; Hicks; Hulmes; Hummel; Hurt; Ilan; Illinger; Iwai; Jansen; Jansson; Jarosch; Jolley; Juge; **Junge**; Jursky; Kajiura; Kamienietzky; Kanner; Karkossian; Karny; Kawakami; Keynan; Kimura; Klionsky; Kolarov; Kolarova; Koonin; Kopecky; Krogsgaard-Larsen; Kroupis; Krupin; Lang; Larson; Larsson; Le Coutre; Lee; Leite; Lester; Levanon; Leviaran; Lewin; Lewis; Lill; Lindstrom; Liu; Liveanu; Long; Loo; Lopez-Corcuera; Lottspeich; Lozada; Lucero; Luque; Luther; Lvons:....

You will hear from Rachel at 3 PM today

Ma; Maeda; Maggert; Mandel; Mandiyan; Marx; Mason; Mathern; Mattoo; Mazor; Mendoza; Miedel; Milo; Min; Miyaji; Molotskii; Montal; Mor; Moran; Morgan; Moriyama; Muster; Naim; Nakamuta; Nalin; Nataf; **Rachel Nechushtai**; **Hannah Nelson**; **J. Neumann**; Nevo; Nicoll; Notsani; Noumi; Ogi; Ograd; Ohad; Ojemann; Omote; Orlich; Padilla; Padler-Karavani; Padler; Pan; Partensky; Peacock; Peng; Perzov; Petersen; Philipson; Pickering; Pinther; Polakowski; Pomorski; Pretorius; Printer; Purvis; **E. Racker**; Raden; Ralt; Reeves; Reilly; Reimer; Richards; Riezman; Rogel; Rohwer; Rosenwaks; Rott; Rubinstein; Ryan; Sabrova; Sacher; Saito; Sakamoto; Samoray; Saroussi; Sarup; Sawada; Sbia; Schaffernicht; **Schatz**; Schindler; Schnee Bauer; Schousboe; **Schulten**; Schushan; Schuster; Schwarzer; Sears; Segal; **Sener**; Sharon; Shutz; Siebert; Sigrist-Nelson; Sigrist; Silver; Spencer; Sperk; Sreppuhn; Steinemann; Supek; Supekova; Sweet; Taiz; Tal; A. Tamura ; S. Tamura ; Tenkova; Tittgen; Toporik; Tuller; Udenfriend; **Van Amerongen**; Van Hoeck; Van Oort; Verlander; Volotsenko; Voss ; Wang; Wax; Wergin; Westhoff; White; Whitlow; Witte; Wolf; Wright; Xie; Yanagita; Yatabe; Yaver; Yocum; and Zeng; Ziegler; Zimmermann; and Zirngibl.

Three of his coworkers are shown here

Amunts, Drory and Nelson (2007)
Plant
PSI RC at 3.4 A (Nature 447, 58-63)

Ben Shem, Frolow and
Nelson (2003) :
Plant PS I
RC at 4.4 A (Nature 426,
630-635)



The Awards

1992: The Humboldt Award

1997: Elected EMBO Member

2006: Honorary Professorship at Sichuan University, China

2007: Honorary Doctorate from University of Bologna (I will show a few photos)

2011: The Ilanit-Katzir prize of the Federation of Israel Societies of Experimental Biology (FISEB)

2013 : Israel Prize for Life Sciences

2007: Honorary Doctorate From the University of Bologna, Italy

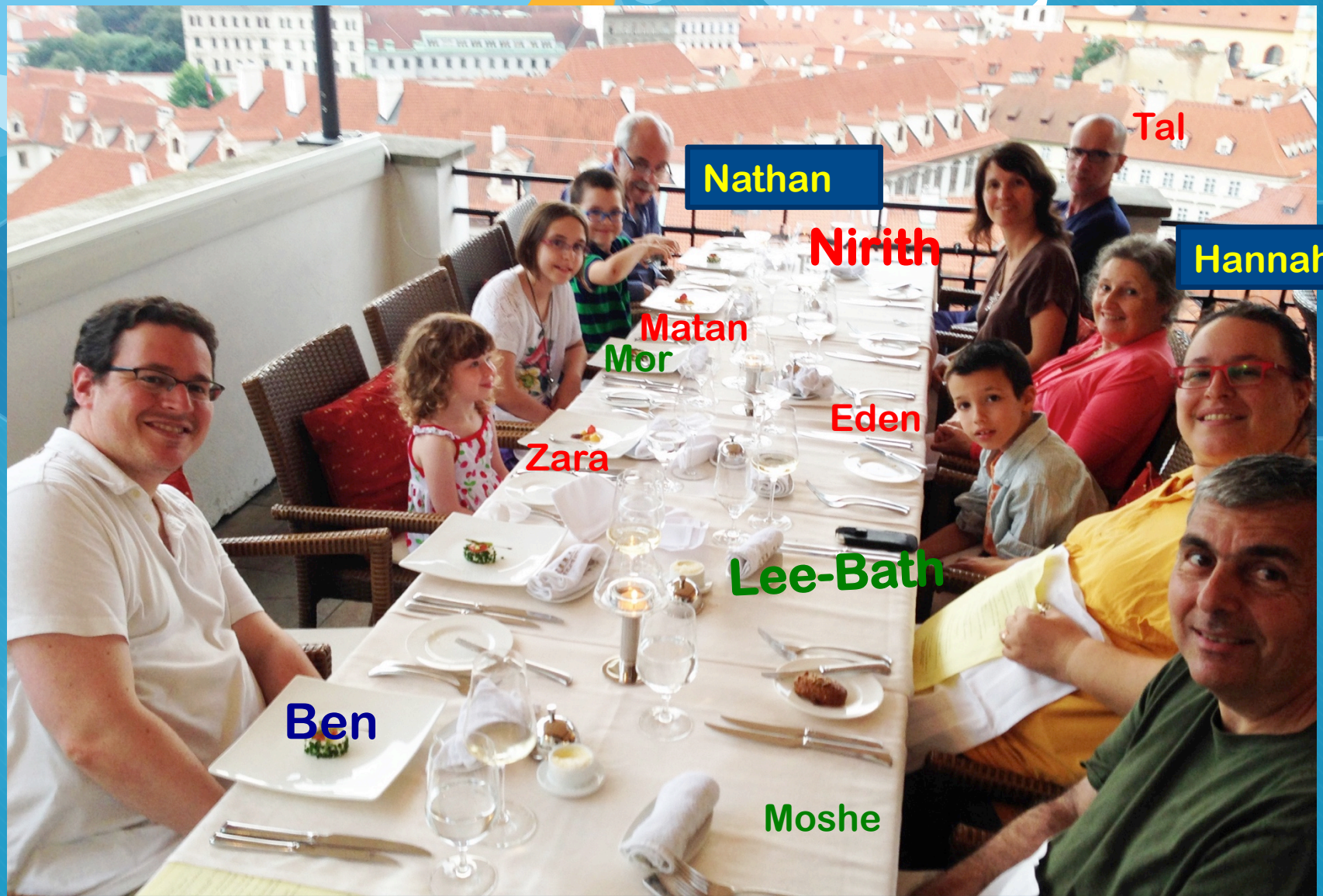


Bruno Andrea Melandri



Well, I missed this big Party at his celebration in Israel !





I end this Tribute with a photo of the family taken by Marina, Ben's wife; missing in the picture are grandkids Xio; and Tome

For this presentation, I am thankful to many including Hannah Nelson, Yuval Mazor, and Gunther Hauska

Sometimes later at dinner or at a banquet, I will tell you, if I am given a chance, as to what Hannah and Yuval told me about Nathan!



From Hannah Nelson

“As a wife and Nathan’s co-worker for many years, I have, of course, stories about Nathan and his work, which is the essence of his life. But those are too long to tell here. I recognized and admired his scientific insightfulness from the start. We studied biology in Tel Aviv University in the same study group: him chain-smoking, waiting for the rest of us trying to understand the question first, and then his solution for it. His parents (Moshe and Genia) adored him. When he was born, he looked to them, as if he was a “copy” of his mother’s father (after whom he was named); Nathan developed to be a very smart and lovable boy. This admiration continues till this day, not only in our family (including our grandchildren) but also among his students who are grateful for the training and working atmosphere, motivation and his insatiable curiosity, which he stirs. They feel it even more when they move to another lab.”

From Yuval Mazor

“One story on the day Nathan received the Israel Prize is interesting to share with you. Nathan did not have any “good” shoes to wear for the ceremony. As a result he had to use his 20 year- old “good shoes“. During the day, they completely fell apart. Regrettably, instead of accepting the award in his socks (which I’m sure he would have done), he managed to borrow a pair of good shoes and received the Prize wearing a respectable attire... A “story” that Nathan enjoys telling are the terrified looks on his *technion* students as they had to endure what he calls “the best test for a student” - having some radioactive nucleotides sprinkled on them and observe their reaction. If they stay still, they pass [Yuval to explain to Govindjee what he means by the following: (fortunately by the time all the people in the photographs got to the lab we stopped doing radioactive work). “