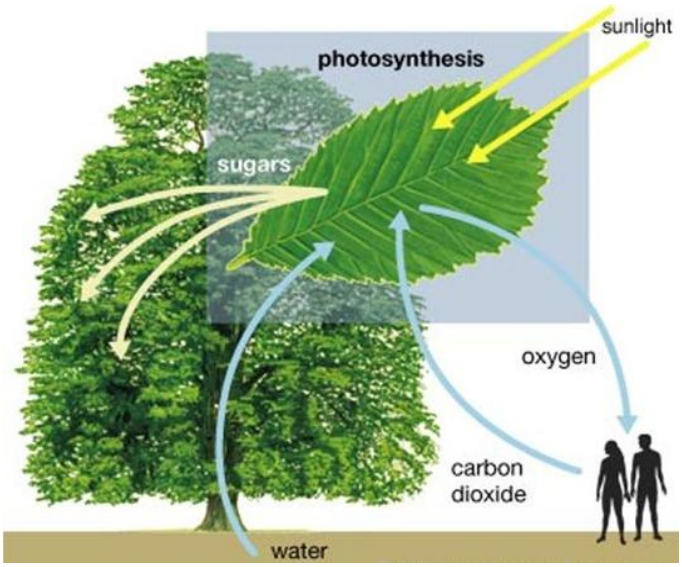
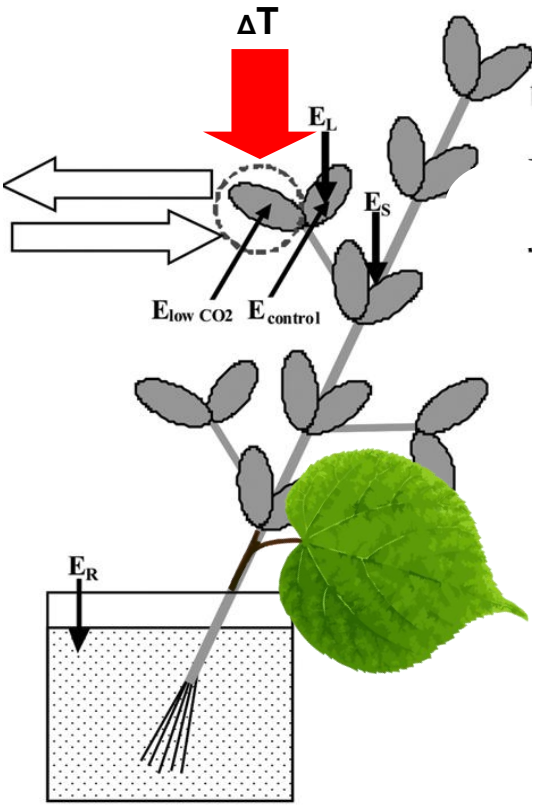
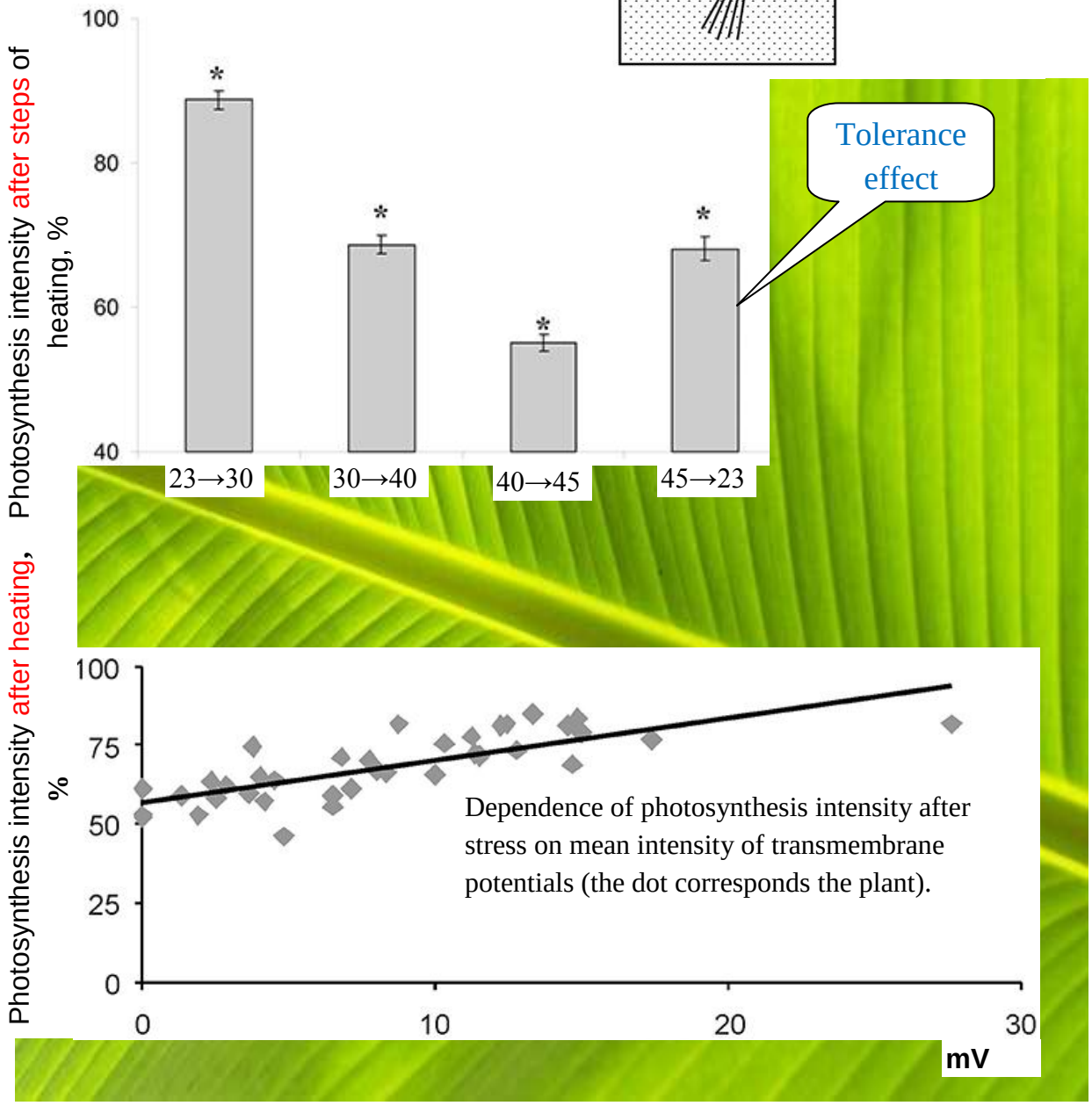
Research (What is it about?)	**Electrical signals in leaves and high-temperature tolerance of plants**
UNN authors	*Sukhov V., Mysyagin S., Vodeneev V.*
We find (The result)	Correlation of photosynthesis intensity after high-temperature stress and mean intensity of electrical signals generated in leaves during stress has been detected
Abstract	It is known that local stresses (overheating, intense irradiation, current passing, chemical etching) induce generation and propagation of electrical signals (transmembrane potentials) in plant leaves. The effect of photosynthesis tolerance to these stressors is also known. It is unknown, however, if there is a connection between electrical signals parameters and photosynthesis intensity after stress (plant tolerance). By using the example of 40 pea plants ensemble, a significant ***positive correlation*** between ***photosynthesis intensity*** after stepped high-temperature stress (10 min variations of temperature 23→30, 30→40, 40→45, 45→23°C) and mean intensity of ***transmembrane potentials*** in leaves during stress has been detected. The dependency is a statistical one: for an individual plant the first signal generation may occur after the first, the second or the third variation of temperature. As the influence of electrical ***signals propagating*** in plants on photosynthesis was established earlier while all aforecited measurements for individual plant were local ones, the statistical significance of the effect needs to be proved by photosynthesis intensity measurements at ***several points*** of the plant. Comparison the statistics of plants and of different leaves in individual plant is also necessary.

Representative articles 2017-2018, quartiles	1. *Sukhov V., Gaspirovich V., Mysyagin S., Vodeneev V.* High-temperature tolerance of photosynthesis can be linked to local electrical responses in leaves of pea. Front. Physiol.: **8**:763 (2017).	Q1
	Q-index (Qi) for the result	**4**
	high blue	

In collaboration	–


sunlight
photosynthesis
sugars
oxygen
carbon
dioxide
water


ΔT
E_L
E_S
E_low CO2
E_control
E_R


Photosynthesis intensity after steps of heating, %
100
80
60
40
*
23→30
30→40
40→45
45→23
Tolerance effect
Photosynthesis intensity after heating, %
100
75
50
25
0
0
10
20
30
mV
Dependence of photosynthesis intensity after stress on mean intensity of transmembrane potentials (the dot corresponds the plant).