Some Thoughts about the International Cooperation between the Carnivorous Plant Societies

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Current Situation

In general the present cooperation between the different C. P. Societies is limited to the exchange of journals. That's it. Why?

Possible Fields for More Cooperation

Sure there are many fields where we could have more exchange and more cooperation. More cooperation would bring advantages for all: For our societies, for our members, for science and for our common hobby.

The following ideas might not all be realistic, but they are all worth pondering.

- Official admission to all events (for example: annual meetings, plant sales and exchanges, excursions) for all members of the other C. P. Societies. Therefore a quicker exchange of information between the societies would be necessary.
- General permit for other societies to translate and reprint the articles of their journals.
- Common database and / or
- Large index of all articles of the C. P. journals
- Exchange of plants and seed not only between the societies but also immediately between their members.
- There are surely many other possibilities of more cooperation. Proposals are welcome. But where to perform and discuss them?

Problem: Lack of Communication

We are missing a platform for discussing these ideas. A platform where representatives of all C. P. Societies could participate without having too many costs and without losing too much time. Phone calls and letters are not practical.

Possible Solution: Carnivorous Plant Societies' Mail-list

The new technologies offer us the solution: A *Carnivorous Plant Societies' Mail-list* as a platform for discussing the above mentioned subjects. A new mail-list, working together with the large international C. P. Discussion Group (which is too large for our purposes - our goals would be drowned in the flood of information) and with mail-lists of the societies. A brainstorming of the C. P. Societies. A platform for discussing problems shared by the other societies in the past, present or future, and new ideas. And a platform for the exchange of information about events and other important subjects.

Just some suggestions. It's up to you - to us - to think about them and perhaps to realize some of them.

Diffused Centromeric Chromosomes and Speciation in *Drosera*

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Like most higher living organisms, dicot plants have a localized centromere in the chromosomes, except for the members of the dicot *Drosera* that have a diffused centromere. *Drosera* chromosomes also have diffused properties of the telomeric repeat sequences $(TTTAGGG)_n$ of *Arabidopsis thaliana*, which have already been proved to hybridize with the chromosome DNA of human, *Leucanthemella linearis*, *Scorzonera austriaca*, *Zea mays* and so on. This phenomenon was found by southern and dot hybridizations. Those diffused telomeres may be required as a functional structure to make the diffused-centromeric chromosomes divide safely into the poles at late metaphase to anaphase. However, they have the rDNA region localized at the nucleolar organizing region like usual higher plants, as detected by the pTa71 probe. The pTa71 contains a 9-kb Eco-RI fragment of rDNA isolated from wheat (*Triticum aestivum*) and recloned into pUC19. Thus, each species of *Drosera* has a specific number of rDNA signals or nucleolar organizing regions. A meiotic chromosome configuration in *Drosera* called "Drosera type pairing" is mainly found in Australian pygmy *Drosera*, while those *Drosera* species distributed in the Northern Hemisphere show exactly the same chromosome pairing configuration as organisms with localized-centromeric chromosomes.

If *Drosera* is exposed to radiation at relatively high doses, its diffused-centromeric chromosomes break to produce multifragments. The best performance was obtained by gamma (γ) irradiation at 50 Gy. Each fragment was still active and continued usual cell division. Thus, many plants exposed to γ-rays show mixoploidy with different chromosome numbers in the cells of the same individual. The natural *D. roseana* has mixoplidy with 2n=5, 6, 7, 8, and 9 perhaps caused by natural radioactive substances. Chromosome aberrations exhibited are the same as those observed in localized-centromeric chromosomes, such as breaks, fusions, gaps, multipolarity, non-disjunction, pulvilization, rings and sister chromatid exchanges. These phenomena artificially produced genetic mutations, such as albino and yellow-colored plants, jelly-like plants, densely-leaved, very flat rosulate-formed plants, and plants with leaves that produced another leaf at the center of lamina. The albino plants were mixoploid.

The chromosomes of 47 species of *Drosera* studied up to the present display a diversified aneuploid series which is well progressed and is still under process especially in the pygmy *Drosera* in Australia, although those of the species in the Northern Hemisphere display always a stable polyploid series with X=10.

Many more new species of *Drosera* may be taxonomically described in Australia and many more new cultivars may be synthesized in the near future.

Structure and Function of Digestive Glands

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By definition, carnivorous plants possess glandular structures that absorb digestion products. In most cases these glands also secrete digestive fluids.

The digestive glands of all genera are composed of two main components, glandular and endodermoid. Depending on the species, both components are composed of either single cells or groups of cells. The cells that are directly involved in the synthesis and release of enzymes, as well as in digest uptake, are the glandular cells. These cells possess a typical glandular cytoplasm with a large nucleus and active organelles, and have a thin outer cell wall with a thin cuticle which is commonly porous, providing the gland with an external boundary of low diffusive resistance.

The endodermoid cells mediate between the glandular unit and the leaf tissues. Their radial walls are typically impregnated with cutin, where their plasma membrane is tightly attached to the cell wall. This unique structure blocks all extracellular transport across the endodermoid layer from the glandular cells and to them, allowing water and solute movement that is controlled by the endodermoid cytoplasm. The