IAPT RESEARCH GRANT APPLICATION FORM

**General Information (cover sheet)**
First name: Luís Adriano

Surname: Funez

Academic degree (with date obtained, in case of Ph.D.): M.Sc. in Botany obtained +Month+ +year+; Ph.D. Student in Botany since August 2018

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Institution: Universidade Federal de Santa Catarina

Address: Departamento de Botânica, Universidade Federal de Santa Catarina, CEP 88040-900, Santa Catarina, Brazil

Field of Specialisation: Taxonomy of Angiosperms

Employment status: Ph.D. Student

List of up to four relevant publications:

Funez, L.A., Ribeiro-Nardes, W., Kossmann, T., Peroni, N. & Dreschsler-Santos, E.R. (2019) *Prosopanche demogorgoni*: A new species of *Prosopanche* (Aristolochiaceae: Hydnoroideae) from southern Brazil. *Phytotaxa 422* (1): 93–100. <http://dx.doi.org/10.11646/phytotaxa.422.1.6>

Funez, L.A. & Hassemer, G. (2018) Novelties in the genus *Persicaria* (Polygonaceae) in Brazil: a new species, a new combination, and a diagnostic key to all species. *Nordic Journal of Botany 36* (1-2): e01631 <https://doi.org/10.1111/njb.01631>

Funez, L.A. & Hassemer, G. (2017) *Phyllanthus eremitus*(Phyllanthaceae), a narrowly endemic new species from Santa Catarina, southern Brazil, and lectotypification and range extension of *P. hyssopifolioides*. *Phytotaxa 319* (2): 149–158. <http://dx.doi.org/10.11646/phytotaxa.319.2.3>

Funez, L.A., Hassemer, G. & Trevisan, R. (2016) Rediscovery, typification, and conservation assessment of *Saranthe ustulata* (Marantaceae). *Phytotaxa 255* (1): 91–98. <http://dx.doi.org/10.11646/phytotaxa.255.1.9>

Names of people providing recommendation letters (2 letters are required): Gustavo Hassemer and André Luís de Gasper

**Project Details**

Title of proposed project: Study of the challenging *Margyricarpus pinnatus* (Rosaceae: Sanguisorbeae) complex

Description of the project in less than 50 words: *Margyricarpus* is a genus of Rosaceae with a wide distribution in South America. Field work conducted in southern Brazil evidenced problems and inconsistencies in the current taxonomic treatment for *Margiricarpus pinnatus*. Our goal with this project is to clarify and resolve the taxonomical classification of the very challenging *M. pinnatus* species complex, including the description of new species if necessary.

Total budget request: $1.918,00

**CURRICULUM VITAE**

**Complete name** Luís Adriano Funez - March 13, 1991/ Brazilian **Occupation** PhD Student201

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***EDUCATION***

**PhD Candidate in Biology of Fungi, Algae and Plants**, Universidade Federal de Santa Catarina (Brazil)

August 2018 – ongoing

PhD Project: Flora and Funga interactions in the cloud forests of Parque Nacional de São Joaquim, Santa Catarina. Supervisor: Elisandro Ricardo Drechsler-Santos/ Co-supervisor: Nivaldo Peroni.

**Masters in Biology of Fungi, Algae and Plants**, Universidade Federal de Santa Catarina (Brazil)

March 2014 – March 2016

MS Dissertation: Floristics and phytosociology of “Campos do Quiriri”, Santa Catarina/Paraná, Brazil. Supervisor: Rafael Trevisan.

**Graduation in Biological Sciences**, Universidade Regional de Blumenau (Brazil)

February 2009 – December 2013

***PUBLICATIONS***

Funez, L.A. & Drechsler-Santos, E.R. (2019) Chascolytrum neobulbosum (Poaceae: Pooideae), a new species from southern Brazil. Phytotaxa 424(2): 115–122. <http://dx.doi.org/10.11646/phytotaxa.424.2.5>

Funez, L.A., Jaramillo, J.C. & Drechsler-Santos, E.R. (2019) *Begonia medeiroii* (Begoniaceae), a new species endemic to Santa Catarina, southern Brazil. *Phytotaxa* 423(2): 105–110. <http://dx.doi.org/10.11646/phytotaxa.423.2.7>

Funez, L.A., Ribeiro-Nardes, W., Kossmann, T., Peroni, N. & Dreschsler-Santos, E.R. (2019) *Prosopanche demogorgoni*: A new species of *Prosopanche* (Aristolochiaceae: Hydnoroideae) from southern Brazil. *Phytotaxa* 422(1): 93–100. <http://dx.doi.org/10.11646/phytotaxa.422.1.6>

Ernst, M., Nothias, L.-F., Hooft, J.J.J., Silva, R.R., Saslis-Lagoudakis, C.H., Grace, O.M., Martinez-Swatson, K.A., Hassemer, G., Funez, L.A., Simonsen, H.T., Medema, M.H., Staerk, D., Nilsson, N., Lovato, P., Dorrestein, P.C. & Rønsted, N. (2019) Assessing specialized metabolite diversity in the cosmopolitan plant genus *Euphorbia* L. *Frontiers in Plant Science* 10: e846. <http://dx.doi.org/10.3389/fpls.2019.00846>

Funez, L.A. & Jaramillo, J.C. (2019) *Begonia ciliatifolia* (Begoniaceae), a rare, critically endangered new species endemic from Santa Catarina, southern Brazil. *Phytotaxa* 407(1): 43–50. <http://dx.doi.org/10.11646/phytotaxa.407.1.7>

Funez, L.A. Hassemer, G., Lunkes, E.A. & Drechesler-Santos, E.R. (2019) Rediscovery of *Ruellia reitzii* (Acanthaceae), a narrowly endemic critically endangered species from Santa Catarina, southern Brazil, and notes on *R. squarrosa.* *Webbia* 74(1): 43–49. <http://dx.doi.org/10.1080/00837792.2019.1607997>

BGF (2018) Brazilian Flora 2020: Innovation and collaboration to meet Target 1 of the Global Strategy for Plant Conservation (GSPC) *Rodriguésia*
69(4): 1513–1527. <http://dx.doi.org/10.1590/2175-7860201869402>

Hassemer, G., Iamonico, D. & Funez, L.A. (2018) (2631) Proposal to conserve the name *Commelina erecta* (Commelinaceae) with a conserved type. *Taxon*67(4): 810–811. <http://dx.doi.org/10.12705/674.16>

Funez, L.A. & Hassemer, G. (2018) *Hoehnea grandiflora* (Lamiaceae), a rare, critically endangered new species from southern Brazil. *Phytotaxa* 349(2): 159–166. <http://dx.doi.org/10.11646/phytotaxa.349.2.6>

Funez, L.A. & Pansarin, E.R. (2018) *Cleistes pallida* (Orchidaceae Vanilloideae): a new species from South Brazil. *Phytotaxa* 349(1): 61–66. <https://doi.org/10.11646/phytotaxa.349.1.7>

Funez, L.A., Ferreira, J.P.R. & Hassemer, G. (2018) *Phyllanthus timboënsis* (Phyllanthaceae), a new species from Santa Catarina, southern Brazil. *Webbia*73(1): 63–69. <http://dx.doi.org/10.1080/00837792.2018.1452370>

Funez, L.A. & Hassemer, G. (2018) Novelties in the genus *Persicaria* (Polygonaceae) in Brazil: a new species, a new combination, and a diagnostic key to all species. *Nordic Journal of Botany* 36(1–2): e01631 <https://doi.org/10.1111/njb.01631>

Hassemer, G., Ferreira, J.P.R. & Funez, L.A. (2017). *Alysicarpus ovalifolius* (Fabaceae, Desmodieae), a new record for the flora of Brazil. *Iheringia Serie Botanica* 72(3): 325–330. <http://dx.doi.org/10.21826/2446-8231201772302>

Keller, H.A. & Funez, L.A. (2017) A new species of *Oxypetalum* (Apocynaceae: Asclepiadoideae) from Santa Catarina, Brazil. *Bonplandia* 26(2): 119–124. <http://dx.doi.org/10.30972/bon.2622569>

Funez, L.A., Hassemer, G., Ferreira, J.P.R., Bones, F.L.V. & Santos, A.P. (2017) Fifty-five new records of vascular plants, and other discoveries for the flora of Santa Catarina, southern Brazil. *Webbia*72(2): 221–275. <http://dx.doi.org/10.1080/00837792.2017.1369303>

Funez, L.A. & Hassemer, G. (2017) *Phyllanthus eremitus*(Phyllanthaceae), a narrowly endemic new species from Santa Catarina, southern Brazil, and lectotypification and range extension of *P. hyssopifolioides*. *Phytotaxa* 319(2): 149–158. <http://dx.doi.org/10.11646/phytotaxa.319.2.3>

Hassemer, G., Funez, L.A. & Ferreira, J.P.R. (2017) *Tradescantia serrana* (Commelinaceae), a new species from southern Brazil, and notes on *T. schwirkowskiana* and *T. umbraculifera*. *Phytotaxa* 312(2): 213–227. <http://dx.doi.org/10.11646/phytotaxa.312.2.4>

Hassemer, G. Funez, L.A., Ferreira, J.P.R. & Aona-Pinheiro, L.Y.S. (2017) The correct typification of *Tradescantia crassula* (Commelinaceae). *PhytoKeys* 80: 121–127. <http://dx.doi.org/10.3897/phytokeys.80.13448>

Hassemer, G. Silva, O.L.M., Funez, L.A., Ernst, M., Cordeiro, I. & Ronsterd, N. (2017) Updates on the genus *Euphorbia* (Euphorbiaceae) in Santa Catarina, Brazil. *Phytotaxa*298(3): 222–238. <http://dx.doi.org/10.11646/phytotaxa.298.3.2>

Funez, L.A., Hassemer, G. & Ferreira, J.P.R. (2017) Rediscovery of *Senecio reitzianus* (Asteraceae), a species believed to be possibly extinct, on Santa Catarina Island, southern Brazil. *Phytotaxa* 291(3): 183–191. <http://dx.doi.org/10.11646/phytotaxa.291.3.2>

Funez, L.A., Hassemer, G. & Ferreira, J.P.R. (2016) *Hypoxis atlantica* (Hypoxidaceae): a rare new species endemic to coastal eastern Brazil. *Phytotaxa* 282(2): 129–138. <http://dx.doi.org/10.11646/phytotaxa.282.2.4>

Funez, L.A. & Hassemer, G. (2016) Two narrowly endemic new species of *Siphocampylus* (Campanulaceae) from Santa Catarina, southern Brazil. *Phytotaxa*278(3): 241–256. <http://dx.doi.org/10.11646/phytotaxa.278.3.4>

Funez, L.A., Hassemer, G. & Ferreira, J.P.R. (2016) Description of *Tradescantia schwirkowskiana* (Commelinaceae), a narrow endemic new species from Santa Catarina, southern Brazil, and typification of *T. crassula. Phytotaxa* 272(1): 63–72. <http://dx.doi.org/10.11646/phytotaxa.272.1.3>

Pereira, L.T., Silva, H.C.S., Funez, L.A. & Baltazar, J.M. (2016) Mycophagy by small mammals: New and interesting observations from Brazil. *Mycosphere* 7(3): 297–304. <http://dx.doi.org/10.5943/mycosphere/7/3/5>

Funez, L.A., Ferreira, J.P.R., Hassemer, G. & Trevisan, R. (2016) First record of the invasive species *Rottboellia cochinchinensis* (Poaceae, Andropogoneae) in the South Region of Brazil. *Check List* 12(4): e1930. <http://dx.doi.org/10.15560/16841>

Klein-Junior, L.C., Passos, C.S., Salton, J., Bittencourt, F.G., Funez, L.A., Andrade, J.P., Villalobos, J.P., Bordignon, S.A.L., Gasper, A.L., Heyden, Y.V. & Henriques, A.T. (2016) Multifunctional Monoamine Oxidases and Cholinesterases Inhibitory Effects, as well as UPLC-DAD-MS Chemical Profile of Alkaloid Fractions Obtained from Species of the Palicoureeae Tribe. *Natural Product Communication* 11(9): 12710–1274.

Hassemer, G., Ferreira, J.P.R., Funez, L.A. & Aona-Pinheiro, L.Y.S. (2016) Identity and typification of *Commelina vilavelhensis* (Commelinaceae), and typification of *C. robusta* and *C. scabrata*. *Phytotaxa* 260(2): 144–156. <http://dx.doi.org/10.11646/phytotaxa.260.2.4>

Funez, L.A., Hassemer, G. & Trevisan, R. (2016) Rediscovery, typification, and conservation assessment of *Saranthe ustulata* (Marantaceae). *Phytotaxa 255* (1): 91–98. <http://dx.doi.org/10.11646/phytotaxa.255.1.9>

Hassemer, G., Ferreira, J.P.R., Funez, L.A. & Medeiros, J.D. (2016) *Commelina catharinensis* (Commelinaceae): a narrow endemic and endangered new species from Santa Catarina, southern Brazil. *Phytotaxa*246(1): 49–60. <http://dx.doi.org/10.11646/phytotaxa.246.1.4>

Tribess, B., Pintarelli, G.M., Bini, L.A., Camargo, A., Funez, L.A., Gasper, A.L. & Zeni, A.L.B. (2015) Ethnobotanical study of plants used for therapeutic purposes in the Atlantic Forest region, Southern Brazil. *Journal of Ethnopharmacology* 164: 136–46. <http://dx.doi.org/10.1016/j.jep.2015.02.005>.

Hassemer, G., Ferreira, J.P.R., Funez, L.A. & Trevisan, R. (2015) First records of *Melilotus albus* Medik. (Fabaceae, Faboideae) in Santa Catarina, southern Brazil. *Check List* 11(1): e1499. <http://dx.doi.org/10.15560/11.1.1499>

Funez, L.A. & Gasper, A.L. (2014) Parque Nacional da Serra do Itajaí (southern Brazil) shrub and herbs flora. *Check List*10(6): 1249–1259. <http://dx.doi.org/10.15560/10.6.1249>

Gasper, A.L., Vibrans, A.C., Funez, L.A., Rigon-Junior, M.J., Bittencourt, F. & Vieira, C. (2014) Dr. Roberto Miguel Klein Herbarium (FURB), Blumenau, Southern Brazil. *PhytoKeys* 37(42): 21–37. <http://dx.doi.org/10.3897/phytokeys.42.6865>

Agudo-Padrón, A.I., Luz, J.S., Funez, L.A. & Zermiani, A.E. (2014) Nine new records to inventory of continental mollusc species from Santa Catarina State, Central Southern Brazil, central Southern Brazil. *Brazilian Journal of Biological Sciences* 1(1): 15–20.

Agudo-Padrón, A.I., Funez, L.A. & Zermiani, A.E. (2013) First record of operculated amphibian snails “Assimineidae” in Santa Catarina State/ SC, central southern Brazil region. *Ellipsaria* 15(4): 34–37.

**Study of the challenging *Margyricarpus pinnatus* (Rosaceae: Sanguisorbeae) complex**

*Margyricarpus* Ruiz & Pav. is a genus belonging to the Rosaceae family, subtribe Sanguisorbeae. There are only two recognized species: *Margyricarpus pinnatus* (Lam.) Kuntze, which is widely distributed throughout temperate regions of South America (Zardini 1973), and *M. dyginus* (Bitter) Skottsb., an endemic species from Isla San Juan Fernandez, in Chile (Marticorena 2008). According to Skottsberg (1953) *Margyricarpus dyginus* can by differentiated from *Margyricarpus pinnatus* due the presence of two carpels.

The genus is morphologically very similar and is sister to *Tetraglochin* Poepp. (Acosta *et al*. 2016). The main distinctive character between these two genera is the hypanthium: in *Tetraglochin* species are winged and/or spiny dried, while those of *Margyricarpus* are fleshy (Rothamaler 1939, Zardini 1973).

Although the large distribution and to be relatively common in most of its distribution, there are very poor literature about this genus, and the regional floras uses very generic characteristics to describe *M. pinnatus*, as “imparipinnate folioles” or “white to pinkish carnose fruits”, that do not have the level of detail necessary to distinguish the species, as the size and sculpture of the achenes, venation, shape and the size of the tepals, location, density and size of the hairs, the habit, the growing and branching patterns of the whole plant.

Observations made during recent field expeditions in southern Brazil and revision of herbarium collections evidenced considerable morphologic differences between different populations of this supposed species, suggesting that the plants currently circumscribed as *M. pinnatus* could actually comprise a number of overlooked species. Thus, the specific diversity in the genus *Margyricarpus* is most probably greatly underestimated, thus warranting focused taxonomic study to clarify its taxonomy.

**Material and Methods**

We need to study specimens of *Margyricarpus* kept at EFC, FLOR, FURB, HBR, ICN, JOI, MBM, UPCB, LUSC and PACA. Herbarium codes follow Thiers (2019). We will assess the conservation status of the newly-described species following the IUCN Standards and Petitions Subcommittee (2017) criteria. We need to improve our sampling by collecting specimens of *Margyricarpus* in other regions of southern Brazil, especially in southern littoral of Santa Catarina and Rio Grande do Sul and high-altitude grasslands patches of both states and Paraná.

**Objectives and other relevant aspects**

The main objective of this project is to confirm whether these distinctive morphologies of *Margyricarpus pinnatus* in southern Brazil correspond to undescribed species. The first goal is to analyze the type specimens of *Margyricarpus pinnatus*, from Uruguay to be able to apply the correct name to the correct morphology. Additionally, we pretend to review all the synonymies under this name, in order to confirm or disregard the synonymies. To analyses the type specimens, we will request them by courier services from herbarium P.

Other objective is to improve the sampling of this genus, collecting in more localities of southern Brazil, specially in natural grasslands patches and sand dunes of littoral. The collections *in situ* specimens is very important to identify characteristics that are lost with the desiccation or are not disponible on herbarium sheets, as the habitat occupied, the color and shape of the hypanthium and the habit of the plant. These observation on the alive plants will allow us to improve our database about the distribution and consequently the status of conservation of these new species.

Every collected specimen will be deposited in an herbarium collection, with its complete dataset of relevant field information, and a DNA sample will be deposited in silica, with its respective code to allow future research in this genus. Unfortunately we are unable to analyze all the spectrum of variation on that are named “*Margyricarpus pinnatus*” due the high financial cost to travel on several South American countries to review herbarium and specially *in situ* species, but have sure that this study only with Brazilian specimens, comparing with some of neighboring countries will already bring immense advances in the taxonomy of this genus. With several new characters and in-depth analysis, we have the chance to bring these new species the science, as well as describe their ecological patterns, to possibly further expand the analysis to other regions of South America. We suppose that without an initial separation of the species of *Margyricarpus*, these beautiful plants will continue to fall into oblivion and still being in this simplification and underestimation of their complexity.

**Budget:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Amount** | **Unit value** | **Total value** |
| Fuel | 790 liters | U$ 1,01 | U$ 782,18 |
| Lodging for 3 people/day | 12 days | U$ 60,05 | U$ 720,00 |
| Food for 3 people/day | 12 days | U$ 18,02 | U$ 216,24 |
| Courier  | 2 | U$ 100,00 | U$ 200,00 |
| **Total** |  |  | **U$ 1.918,42** |

**References:**

Acosta, J.M., Salariato, D.L. & Cialdellla, A.M. (2016) Molecular Phylogeny and Morphological Analysis of *Tetraglochin* (Rosaceae: Rosoideae: Sanguisorbeae) and Recognition of the New Species *T. andina*. *Systematic Botany* 41(4): 839–850.

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