李涛

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基本信息

姓 名：李涛
职 称： 特聘研究员
最高学位：理学博士
单 位：四川大学生命科学学院
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研究领域 （化学生态学、全球变化生物学）

生物源挥发物诱导排放：研究全球环境变化（二氧化碳、温度、干旱、臭氧）和生物胁迫（昆虫、微生物）对生态系统挥发物排放的影响；模拟区域和全球尺度挥发物的排放通量及其对全球变化的响应

生物源挥发物生理、生态功能：研究生物源（如植物和微生物）挥发物对不同生物群落（植物-植物、植物-昆虫互作、植物-昆虫-微生物互作）的生态调控功能；阐明全球变化（臭氧、全球变暖）对挥发物生理生态功能的影响

生物源挥发物对大气环境的影响：研究生物源挥发物和大气中氧化剂的光化学反应及有机气溶胶的形成；阐明挥发物氧化反应的生态后果

植物抵抗病虫害的防御机制：研究全球变化对植物病虫害的影响；阐明植物响应虫害胁迫的代谢机理

个人履历

教 育

2004.9-2010.12 兰州大学 生态学 博士（直博生）
2000.9-2004.6 兰州大学 生态学 学士

工 作

2021. 3– 特聘研究员 （四川大学生命科学学院）
2020. 8– 2021.3助理教授（丹麦哥本哈根大学生物学院陆地生态研究所）
2018. 4– 2020.8玛丽居里研究员（丹麦哥本哈根大学生物学院陆地生态研究所）
2016.10–2018.3 高级博士后研究员（丹麦哥本哈根大学生物学院陆地生态研究所）
2016.1–2016.10 项目研究员（芬兰NaturVention 公司）
2013.1–2016.8 博士后研究员（芬兰东芬兰大学环境学院化学生态组）
2010.12–2013.1 工程师（云南海达薪生态环境建设有限公司 ）

主持科研项目

全球变暖对极地灌木虫害及挥发物释放的影响研究 (Herbivore-induced emissions of biogenic volatiles from arctic plants under climate warming)，欧盟玛丽居里学者项目，约165万人民币，2018.4–2020.8，项目负责人

参与科研项目

21世纪冻原生物源挥发物排放 (Bundra biogenic volatile emissions in the 21st century)，欧盟研究理事会巩固基金 (ERC Consolidator Grant) (2018–2023)，项目主持人Riikka Rinnan, 资助额度：约2000 万人民币

极地生态系统活性碳氢化合物与大气之间的交换 (Bidirectional exchange of reactive hydrocarbons between arctic ecosystems and the atmosphere)，丹麦独立研究委员会Sapere Aude启动基金 （2015–2018），项目主持人Riikka Rinnan

植物挥发氧化反应产物对植食昆虫的影响 (Degradation products of plant volatiles – impacts on herbivores), 芬兰科学院项目(2015–2018)，项目主持人Jarmo K. Holopainen

植物挥发物介导的植物与植物间的化学通讯：机理与环境效应研究 (Plant-to-plant signalling by volatiles: the mechanisms and the environment), 芬兰科学院项目(2011–2016)，项目主持人James D. Blande

北欧森林植物挥发物的生物诱导释放：昆虫捕食对挥发物释放的影响 (Biotic induction of reactive plant VOCs in boreal forests – impact of insect feeding on VOC profiles)，芬兰科学院项目(2010–2013)，项目主持人Jarmo K. Holopainen

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教学及学生培养

学生培养：已共同培养博士1名、硕士5名、独立培养本科1名; 目前共同指导博士2名、硕士2名、独立指导本科1名、指导访问学者1名

教学：参与本科生、研究生教育以及博士生论坛；主要授课：植物-昆虫互作生态学、化学生态学、生态生理学

学术活动

- Frontiers in Ecology and Evolution 客座编辑。
- 欧盟地平线2020项目、波兰国家自然基金，美国国家自然基金项目评审。
- 学术期刊审稿Science; Atmospheric Environment; Arthropod-Plant Interactions; Building and Environment; New Phytologist; Ecological Entomology; Environmental Science and Pollution Research; Functional Ecology; Insect Science; Plant, Cell & Environment; PLOS ONE; Scientific Reports; Journal of Economic Entomology; Journal of Ecology等。
-过去5年参加了10次国际学术会议，其中6次被遴选为口头报告。

获奖与荣誉

2017 玛丽居里学者奖 (EC H2020, Marie Curie Intra-European Fellowship)
2012 国际化学生态学会青年差旅奖 (Travel Award from the International Society of Chemical Ecology)
2008 国家留学基金委留学奖 (Study Abroad Scholarship from China Scholarship Council)
2004 兰州大学杰出毕业生奖 (Outstanding Graduate Student Award of Lanzhou University)

科研成果

在Nature Plants、Tree Physiology、Annals of Botany、Ecology Letters、Global Change Biology、Journal of Chemical Ecology、Functional Ecology、Indoor Air等国际刊物发表学术论文35篇（其中第一作者或通讯作者17 篇）；参与出版专著2本。主持欧盟玛丽居里学者项目1项。

发表论文（*通讯作者；#共同第一作者）

Swanson L#, **Li T#***, Rinnan R (In press) Contrasting responses of major and minor volatile compounds to warming and gall-infestation in the Arctic willow Salix myrsinites. Science of the Total Environment.

Baggesen N, **Li T**, Seco R, Holst T, Michelsen A, Rinnan R* (2021) Phenological stage of tundra vegetation and time of day control bidirectional exchange of BVOCs in a climate change experiment on a Subarctic heath. Global Change Biology 27(12): 2928-2944.

Ryde I#, **Li T#***, Rieksta J, Marques dos SB, Neilson EHJ, Gericke O, Jepsen JU, Bork LRH, Holm HS, Rinnan R (2021) Seasonal and elevational variability in the induction of specialized compounds from mountain birch (Betula pubescens var. pumila) by winter moth larvae (Operophtera brumata). Tree Physiology 6(41): 1019-1033. （封面文章）

Rieksta J, **Li T***, Junker RR, Jepsen JU, Ryde I, Rinnan R (2020) Insect herbivory strongly modifies mountain birch volatile emissions. Frontiers in Plant Science 11:558979. IF = 4.402

Seco R*, Holst T, Matzen MS, Westergaard-Nielsen A, **Li T**, Simin T, Jansen J, Crill P, Friborg T, Rinne J, Rinnan R (2020) Volatile organic compound fluxes in a subarctic peatland and lake. Atmospheric Chemistry and Physics 20 (21): 13399-13416. IF = 5.414

Li T, Grauer-Gray K, Holopainen JK*, Blande JD (2020) Herbivore gender effects on volatile induction in aspen and on olfactory responses in leaf beetles. Forests 11(6): 638. IF = 2.116

Li T*, Tiiva P, Rinnan Å, Julkunen-Tiitto R, Michelsen A, Rinnan R (2020) Long-term effects of elevated CO_2, nighttime warming and drought on plant secondary metabolites in a temperate heath ecosystem. Annals of Botany 125: 1065–1075. IF = 3.454

Li T*, Holst T, Michelsen A, Rinnan R (2019) Amplification of plant volatile defence against insect herbivory in a warming Arctic tundra. Nature Plants 5(6): 568–574. IF = 13.3

Mikkonen A, **Li T***, Vesala M, Saarenheimo J, Ahonen V, Kärenlampi S, Blande JD, Tiirola M, Tervahauta A (2018) Biofiltration of airborne VOCs with green wall systems – microbial and chemical dynamics. Indoor Air 28: 697–707. IF = 4.7

Li T*, Blande JD (2017) Volatile-mediated within-plant signaling in hybrid aspen: required for systemic responses. Journal of Chemical Ecology 43: 327–338. IF = 2.4

Li T*, Blande JD (2017) How common is within-plant signalling via volatiles? Plant Signaling & Behavior 12: e1347743. IF = 1.671

Giron-Calva P*, **Li T**, Blande JD (2017) Elevated ozone impedes volatile-mediated interactions between cabbage plants in the field. Journal of Chemical Ecology 43: 339–350. IF = 2.4

Yang HS, Sun CX, **Li T***, Li GJ, Ke WS, Sun QX* (2017) Preparation and evaluation of camptothecin granules for molluscacidal activity. Allelopathy Journal 42: 145–155. IF = 1.05

Zhang Q, Yang JJ, Koide RT, **Li T**, Yang HS, Chu JM (2017) A meta-analysis of soil microbial biomass from established tree plantations over various land uses, climates and plant communities. CATENA 150: 256–260. IF = 3.2

Giron-Calva P*, **Li T**, Blande JD (2016) Plant-plant interactions affect the susceptibility of plants to oviposition by pests but are disrupted by ozone pollution. Agriculture, Ecosystems & Environment 233: 352–360. IF = 4.1

Li T*, Blande JD, Holopainen JK (2016) Atmospheric transformation of plant volatiles disrupts host plant finding. Scientific Reports 6: 33851. IF = 4.2

Khaling E*, **Li T**, Holopainen JK, Blande JD (2016) Elevated ozone modulates herbivore-induced volatile emissions of Brassica nigra and alters a tritrophic interaction. Journal of Chemical Ecology 42: 368–381. IF = 2.4

Farré-Armengol G*, Peñuelas J, **Li T**, Yli-Pirilä P, Filella I, Llusia J, Blande JD (2016) Ozone degrades floral scent and reduces pollinator attraction to flowers. New Phytologist 209: 152–160. IF = 7.3

Koski TM, Laaksonen T, Mäntylä E, Ruuskanen S, **Li T**, Girón-Calva PS, Huttunen L, Blande JD, Holopainen JK, Klemola T (2015) Do insectivorous birds use volatile organic compounds from plants as olfactory foraging cues? Three experimental tests. Ethology 121: 1131–1144. IF = 1.4

Li T, Blande JD* (2015) Associational susceptibility in broccoli: mediated by plant volatiles, impeded by ozone. Global Change Biology 21: 1993–2004. IF=8.9

Misztal PK, Hewitt CN, Wildt J, Blande JD, Eller ASD, Fares S, Gentner DR, Gilman JB, Graus M, Greenberg J, Guenther AB, Hansel A, Harley P, Huang M, Jardine K, Karl T, Kaser L, Keutsch FN, Kiendler-Scharr A, Kleist E, Lerner BM, **Li T**, Mak J, Nölscher AC, Schnitzhofer R, Sinha V, Thornton B, Warneke C, Wegener F, Werner C, Williams J, Worton DR, Yassaa N, Goldstein AH (2015) Atmospheric benzenoid emissions from plants rival those from fossil fuels. Scientific Reports 5: 12064. IF=4.2

Giron-Calva PS, **Li T***, Koski TM, Klemola T, Laaksonen T, Huttunen L, Blande JD (2014) A role for volatiles in intra- and inter-plant interactions in birch. Journal of Chemical Ecology 40: 1203–1211. IF=2.4

Li T*, Blande JD, Gundel PE, Helander M, Saikkonene K (2014) Epichloë endophytes alter inducible defences in host grasses. PLOS ONE 9: e101331. IF=2.8

Huttunen L, Blande JD, **Li T**, Rousi M, Klemola T (2013) Effects of warming climate on early-season carbon allocation and height growth of defoliated mountain birches. Plant Ecology 214: 373–383. IF=1.6

Li T*, Holopainen JK, Kokko H, Tervahauta A, Blande JD (2012) Herbivore-induced aspen volatiles temporally regulate two different indirect defences in neighbouring plants. Functional Ecology 26: 1176–1185. IF=5.6

Blande JD, **Li T**, Holopainen JK (2011) Air pollution impedes plant-to-plant communication but what is the signal? Plant Signaling & Behavior 6: 1234–1236. IF = 1.64

Blande JD, Holopainen JK, **Li T** (2010) Air pollution impedes plant-to-plant communication by volatiles. Ecology Letters 13: 1172–1181. IF=9.4

Cheng DL#, **Li T#**, Zhong QL, Wang GX (2010) Scaling relationship between tree respiration rates and biomass. Biology Letters 6: 715–717. IF=3.1

Wu FJ, Yu ZL, Wei XP, Deng JM, **Li T**, Zhao CM, Wang GX (2010) Relationship between groundwater depth and pattern of net primary production in Oasis-Desert ecotone. Polish Journal of Ecology 58: 681–692. IF=0.6

Li T, Deng JM, Wang GX, Cheng DL, Yu ZL (2009) Isometric scaling relationship between leaf number and size within current-year shoots of woody species across contrasting habitats. Polish Journal of Ecology 57: 659–667. IF=0.5

Cheng DL, Wang GX, Tang QL, **Li T**, Zhong QL (2009) Invariant allometric relationship between above-ground and below-ground biomass along a moisture gradient in North-west China. Polish Journal of Ecology 57: 669–675. IF=0.6

Deng JM, **Li T**, Wang GX, Liu JQ, Zhao CM, Ji MF, Zhang Q, Yu ZL (2008) Trade-offs between the metabolic rate and population density of plants. PLOS ONE 3: e1799. IF=2.8

Wang Y, Deng JM, **Li T**, Xie ZK, Wang RY, Wang GX (2008) Spatial distribution of leaf form and the self-thinning exponent are affected by the sensitivity of the response to abscisic acid in an Arabidopsis thaliana population. Journal of Plant Biology 51: 64–73. IF=1.4

Cheng DL, Wang GX, **Li T**, Tang QL, Gong XM (2007) Relationships among the stem, aboveground and total biomass across Chinese forests. Journal of Integrative Plant Biology 49: 1573–1579. IF=3.9

Li Y, Wang GX, Xin M, Yang HM, Wu XJ, **Li T** (2004) The parameters of guard cell calcium oscillation encode stomatal oscillation and closure in Vicia faba. Plant Science 166: 415–421. IF=3.4

学术专著

1. Himanen SJ, **Li T**, Blande JD, Holopainen JK (2017) Volatile organic compounds in integrated pest management of Brassica oilseed crops. Reddy GVP (eds.). Integrated Management of Insect Pests on Canola and other Brassica oilseed crops. pp281–294.
2. **Li T** (2016) Neighbour recognition through volatile-mediated interactions. Blande JD & Glinwood R (eds.). Deciphering Chemical Language of Plant Communication, Signaling and Communication in Plants. pp 153–174.

学术 会议

Li T, Malene Swanson L, Michelsen A, Rinnana R. 2020. Joint impacts of warming and insect herbivory on Salix volatile emissions in the Arctic ecosystem. The 4th NSO conference, Oikos 2020. Reykjavik, Iceland. **(Oral presentation).**

Li T, Host T, Michelsen A, Rinnan R. 2018. Warming in the Arctic amplifies herbivore-induced BVOC emission. Gordon Research Conferences on Biogenic Hydrocarbon and Atmosphere, Les Diablerets, Switzerland. (**Oral presentation**).

Li T, Tiiva P, Michelsen A, Rinnan R. 2017. Long-term effects of elevated CO_2, warming and droughts on VOC emission and phenolics production of Calluna vulgaris in a temperate heath ecosystem. 16th International Symposium on Insect-Plant Relationship (SIP), Tours, France. (**Oral presentation**).

Li T, Blande JD. 2016. Effects of long-term open-field ozone exposure on constitutive and herbivore-induced volatiles of hybrid aspen. Gordon Research Conferences on Biogenic Hydrocarbon and Atmosphere, Girona, Spain. (Poster).

Li T, Blande JD. 2015. Ozone pollution compromises within-plant signalling via volatiles. 31st Annual Meeting of International Society of Chemical Ecology (ISCE), Stockholm, Sweden. (**Oral presentation**).

Giron-Calva S, **Li T**, Blande JD. 2015. Effects of plant-plant signaling on the oviposition preference of Pieris brassicae and Plutella xylostella females under elevated ozone conditions. 31st Annual Meeting of International Society of Chemical Ecology (ISCE), Stockholm, Sweden. (Poster).

Li T, Blande JD. 2014. Atmospheric transformation of plant volatiles reduces plant apparency to herbivores. Gordon Research Conferences on Plant Volatiles, California, USA. (Poster).

Blande JD, **Li T**. 2014. Malicious signals – when plants should not eavesdrop. 15th International Symposium on Insect-Plant Relationship (SIP), Neuchâtel, Switzerland. (Poster).

Li T, Blande JD. 2013. Variation in endophyte-mediated effects on constitutive and induced volatile emissions among fescue species. Finnish Plant Sciences Days meeting, Helsinki, Finland. (**Oral presentation**).

Li T, Blande JD. 2012. The effects of ozone on plant-plant communication: chemical ecology in a changing global and polluted environment. 28th Annual Meeting of International Society of Chemical Ecology (ISCE), Vilnius, Lithuania. (**Oral presentation**).

Li T, Blande JD. 2012. Effects of tropospheric ozone on airborne plant-plant communication: from lab to field. Gordon Research Conferences on Plant Volatiles, California, USA. (Poster).

Li T, Holopainen JK, Wang GX, Blande JD. 2010. Altered carbohydrate translocation from primary leaves affects two indirect defences of secondary leaves in lima bean. British Ecological Society Annual Symposium, Brighton, UK. (Poster).

Blande JD, Holopainen JK, **Li T**. 2010. Plant-plant signalling in a changing troposphere – A breakdown in communication? British Ecological Society Annual Symposium, Brighton, UK. (**Oral presentation**).

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