

## LIST OF PUBLICATIONS (JÜRG ENKERLI)

### Peer reviewed Research Articles

- Pedrazzini C, Strasser H, Holderegger R, Widmer F, **Enkerli J** (2021). Development of a SNP-based tool for the identification and discrimination of *Melolontha melolontha* and *Melolontha hippocastani*. Bulletin of Entomological Research. Online, doi.org/10.1017/S0007485320000784
- Mayerhofer J, **Enkerli J**, Widmer F (2020). Small bias of one highly dominant taxon on community analyses using amplicon sequencing. Journal of Microbiological Methods 178: 106069. doi.org/10.1016/j.mimet.2020.106069
- Mayerhofer J, Lutz A, Dennert F, Rehner S, Kepler R, Widmer F, **Enkerli J** (2019). A species-specific multiplexed PCR amplicon assay for distinguishing between *Metarhizium pingshaense*, *M. anisopliae*, *M. robertsii*, and *M. brunneum*. Journal of Invertebrate Pathology 161: 23-28, doi.org/10.1016/j.jip.2019.01.002
- Mayerhofer J, Rauch H, Hartmann M, Widmer F, Gschwend F, Strasser H, Leuchtmann A, **Enkerli J** (2019). Response of soil microbial communities to the application of a formulated *Metarhizium brunneum* biocontrol strain. Biocontrol Science and Technology 29: 547-564, doi: 10.1080/09583157.2019.1566953
- Mayerhofer J, Eckard S, Hartmann H, Grabenweger G, Widmer F, Leuchtmann A, **Enkerli J** (2017). Assessing effects of the entomopathogenic fungus *Metarhizium brunneum* on soil microbial communities in *Agriotes* spp. biological pest control. FEMS Microbiology Ecology 93: doi.org/10.1093/femsec/fix117
- Eckard S, Bacher S, **Enkerli J**, Grabenweger G (2017). A simple in vitro method to study interactions between soil insects, entomopathogenic fungi, and plant extracts. Entomologia Experimentalis et Applicata 163: 315–327, doi: 10.1111/eea.12578
- Rogge SA, Mayerhofer J, **Enkerli J**, Grabenweger G (2017). Preventive application of an entomopathogenic fungus in cover crops for microbial wireworm control. BioControl 163: 315–327, doi:10.1007/s10526-017-9816-x
- Rauch H, Steinwender BM, Mayerhofer J, Sigsgaard L, Eilenberg J, **Enkerli J**, Zelger R, Strasser H (2017). Field efficacy of *Heterorhabdus bacteriophora* (Nematoda: Heterorhabditidae), *Metarhizium brunneum* (Hypocreales: Clavicipitaceae), and chemical insecticide combinations for *Diabrotica virgifera virgifera* larval management. Biological Control 107: 1–10, doi.org/10.1016/j.biocntrol.2017.01.007
- Jaber L, **Enkerli J** (2017). Fungal entomopathogens as endophytes: can they promote plant growth? Biocontrol Science & Technology 27: 28-41, doi.org/10.1080/09583157.2016.1243227
- Castro T, Mayerhofer J, **Enkerli J**, Eilenberg J, Meyling N, de Andrade Moral R, Garcia Borges Demétrio C, Delalibera Jr I. (2016). Persistence of Brazilian isolates of the entomopathogenic fungi *Metarhizium anisopliae* and *M. robertsii* in strawberry crop soil after soil drench application. Agriculture, Ecosystems & Environment 233:361-369, doi.org/10.1016/j.agee.2016.09.031
- Fernández-Bravo M, Garrido-Jurado I, Valverde-García P, **Enkerli J**, Quesada-Moraga E (2016). Responses to abiotic environmental stresses among phylloplane and soil isolates of *Beauveria bassiana* from two holm oak ecosystems. Journal of Invertebrate Pathology 141: 6-17, doi.org/10.1016/j.jip.2016.09.007
- Jaber L, **Enkerli J** (2016). Effect of seed treatment duration on growth and colonization of *Vicia faba* by endophytic *Beauveria bassiana* and *Metarhizium brunneum*. Biological Control 103: 187-195, doi.org/10.1016/j.biocntrol.2016.09.008
- Steinwender B, **Enkerli J**, Widmer F, Eilenberg J, Kristensen HL, Bidochka MJ, Meyling NV (2015). Root isolations of *Metarhizium* spp. from crops reflect diversity in the soil and indicate no plant specificity. Journal of Invertebrate Pathology 132: 142-148, doi.org/10.1016/j.jip.2015.09.007
- Mayerhofer J, Lutz A, Widmer F, Rehner SA, Leuchtmann A, **Enkerli J** (2015). Multiplexed microsatellite markers for seven *Metarhizium* species. Journal of Invertebrate Pathology 132: 132-134, doi.org/10.1016/j.jip.2015.09.006
- Mayerhofer J, **Enkerli J**, Zelger R, Strasser H (2015). Biological control of the European cockchafer: Persistence of *Beauveria brongniartii* after long-term applications in the Euroregion Tyrol. BioControl 60: 617-629, doi:10.1007/s10526-015-9671-6
- Steinwender BM, **Enkerli J**, Widmer F, Eilenberg J, Thorup-Kristensen K, Meyling NV (2014). Molecular diversity of the entomopathogenic fungal *Metarhizium* community within an agroecosystem. Journal of Invertebrate Pathology 123: 6-12, doi.org/10.1016/j.jip.2014.09.002
- Eckard S, Ansari MA, Bacher S, Butt TM, **Enkerli J**, Grabenweger G (2014). Virulence of in vivo and in vitro produced conidia of *Metarhizium brunneum* strains for control of wireworms Crop Protection 64: 137-142, doi.org/10.1016/j.cropro.2014.06.017
- Schneider S, Widmer F, Jacot K, Kölliker R, **Enkerli J** (2012). Spatial distribution of *Metarhizium* clade 1 in agricultural landscapes with arable land and different semi-natural habitats. Applied Soil Ecology 52: 20-28, doi:10.1016/j.apsoil.2011.10.007
- Meyling NV, Pilz C, Keller S, Widmer F, **Enkerli J** (2012). Diversity of *Beauveria* spp. isolates from pollen beetles *Meligethes aeneus* in Switzerland. Journal of Invertebrate Pathology 109: 76-82, doi:10.1016/j.jip.2011.10.001

- Schneider S, Rehner SA, Widmer F, **Enkerli J** (2011) A PCR-based tool for cultivation-independent detection and quantification of *Metarhizium* clade 1. *Journal of Invertebrate Pathology* 108: 106-114, doi:10.1016/j.jip.2011.07.005
- Pilz C, **Enkerli J**, Wegensteiner R, Keller S (2011). Establishment and persistence of the entomopathogenic fungus *Metarhizium anisopliae* in maize fields. *Journal of Applied Entomology* 135: 393-403, doi: 10.1111/j.1439-0418.2010.01566.x
- Vogelsgang S, **Enkerli J**, Jenny E, Roffler S, Widmer F (2011). Characterization of *Fusarium poae* microsatellite markers on strains from Switzerland and other countries. *Journal of Pathology* 159: 197-200, doi: 10.1111/j.1439-0434.2010.01747.x
- Fournier A, Widmer F, **Enkerli J** (2010). Assessing winter-survival of *Pandora neoaphidis* in soil with bioassays and molecular approaches. *Biological Control* 54:126-134, doi:10.1016/j.bioc.2010.04.001
- Fournier A, Widmer F, **Enkerli J** (2010). Development of a single nucleotide polymorphism (SNP) assay for genotyping of *Pandora neoaphidis*. *Fungal Biology* 114: 498-506, doi:10.1016/j.funbio.2010.03.012
- Enkerli J.**, and Widmer F. (2010) Molecular ecology of fungal entomopathogens: molecular genetic tools and their applications in population and fate studies. *BioControl* 55: 17-37, doi: 10.1007/s10526-009-9251-8
- Schneider S, Hartmann M, **Enkerli J** Widmer F (2010). Fungal community structure in soils of conventional and organic farming systems. *Fungal Ecology* 3: 215-224, doi:10.1016/j.funeco.2009.10.006
- Enkerli J**, Ghormade V, Oulevey C, Widmer F (2009). PCR - RFLP analysis of chitinase genes enables efficient genotyping of *Metarhizium anisopliae* var. *anisopliae*. *Journal of Invertebrate Pathology* 102: 185-188, doi:10.1016/j.jip.2009.08.006
- Oulevey C, Widmer F, Kölliker R, **Enkerli J** (2009). An optimized microsatellite marker set for detection of *Metarhizium anisopliae* genotype diversity on field and regional scales. *Mycological Research* 113:1016-1024, doi:10.1016/j.mycres.2009.06.005
- Schneider S, **Enkerli J**, Widmer F (2009). A generally applicable assay for the quantification of inhibitory effects on PCR. *Journal of Microbiological Methods* 78: 351-353, doi:10.1016/j.mimet.2009.06.010
- Schwarzenbach K, **Enkerli, J**, Widmer F (2009). Effects of biological and chemical insect control agents on fungal community structures in soil microcosms. *Applied Soil Ecology* 42: 54-62, doi:10.1016/j.apsoil.2009.02.001
- Vogelsgang S, Widmer F, Jenny E, **Enkerli J** (2009). Characterisation of novel *Fusarium graminearum* microsatellite markers in different *Fusarium* species from various countries European Journal of Plant Pathology 123: 477-482, doi 10.1007/s10658-008-9379-x
- Fournier A, **Enkerli J**, Keller S, Widmer F (2008). A PCR-based tool for the cultivation-independent monitoring of *Pandora neoaphidis*. *Journal of Invertebrate Pathology* 99: 49-56, doi:10.1016/j.jip.2008.03.013
- Enkerli J**, Gisler A, Kölliker R, and Widmer F (2008). Development of 16 microsatellite markers for the European cockchafer *Melolontha melolontha*. *Molecular Ecology Notes* 8:158-160, doi: 10.1111/j.1471-8286.2007.01909.x
- Schwarzenbach K, Widmer F, **Enkerli J** (2007). Cultivation-independent analysis of fungal genotypes in soil using simple sequence repeat markers. *Applied and Environmental Microbiology* 73: 6519-6525, doi:10.1128/AEM.01405-07
- Hartmann M, Enkerli J, Widmer F (2007). Residual polymerase activity induced bias in terminal restriction fragment length polymorphism analysis. *Environmental Microbiology* 9: 555-559, doi:10.1111/j.1462-2920.2006.01169.x
- Schwarzenbach K, **Enkerli J**, Widmer F (2007). Objective criteria to assess representativity of soil fungal community profiles. *Journal of Microbiological Methods* 68: 358-366, doi:10.1016/j.mimet.2006.09.015
- Studer B, Widmer F, **Enkerli J**, Kölliker R (2006). Development of novel microsatellite markers for the grassland species *Lolium multiflorum*, *Lolium perenne* and *Festuca pratensis*. *Molecular Ecology Notes* 6: 1108-1110, doi:10.1111/j.1471-8286.2006.01452.x
- Kölliker R, **Enkerli J**, Widmer F (2006). Characterisation of novel microsatellite loci for red clover (*Trifolium pratense* L.) from enriched genomic libraries. *Molecular Ecology Notes* 6: 50-53, doi: 10.1111/j.1471-8286.2005.01133.x
- Enkerli J**, Kölliker R, Keller S, Widmer F (2005). Isolation and characterization of microsatellite markers from the entomopathogenic fungus *Metarhizium anisopliae*. *Molecular Ecology Notes* 5: 384-386, doi: 10.1111/j.1471-8286.2005.00935.x
- Kessler P, **Enkerli J**, Schweizer C, Keller S (2004). Survival of *Beauveria brongniartii* in the soil after application as a biocontrol agent against the European cockchafer *Melolontha melolontha*. *BioControl* 49: 563-581, doi:10.1023/B:BICO.0000036441.40227.ed
- Enkerli J**, Widmer F, Keller S (2004). Long-term field persistence of *Beauveria brongniartii* strains applied as biocontrol agents against European cockchafer larvae in Switzerland. *Biological Control* 29: 115-123, doi: 10.1016/S1049-9644(03)00131-2
- Shiflett A M, **Enkerli J**, Covert S F (2002). *Nht2*, a copia LTR retrotransposon from a conditionally dispensable chromosome in *Nectria haematococca*. *Current Genetics* 41: 99-106, doi: 10.1007/s00294-002-0287-x

- Enkerli J**, Widmer F, Gessler C, Keller S (2001). Strain specific microsatellite markers in the entomopathogenic fungus *Beauveria brongniartii*. Mycological Research 105: 1079-1087, doi: 10.1016/S0953-7562(08)61970-x
- Enkerli J**, Reed H, Briley A, Bhatt G, Covert S F (2000). Physical map of a conditionally dispensable chromosome in *Nectria haematococca* mating population VI and location of chromosome breakpoints. Genetics 155: 1083-1094
- Enkerli J**, Felix G, Boller T (1999). The Enzymatic activity of fungal xylanase is not necessary for its elicitor activity. Plant Physiology 121: 391-397, doi: org/10.1104/pp.121.2.391
- Enkerli J**, Bhatt G, Covert S F (1998). Maackiain detoxification contributes to the virulence of *Nectria haematococca* MP VI on chickpea. Molecular Plant-Microbe Interactions 11: 317-326, doi.org/10.1094/MPMI.1998.11.4.317
- VanEtten H, Jorgensen S, **Enkerli J**, Covert S F (1998). Inducing the loss of conditionally dispensable chromosomes in *Nectria haematococca* during vegetative growth. Current Genetics 33: 299-303
- Enkerli J, Bhatt G, Covert S F (1997). *Nht1*, a transposable element cloned from a dispensable chromosome in *Nectria haematococca*. Molecular Plant-Microbe Interactions 10: 742-749, doi.org/10.1094/MPMI.1997.10.6.742
- Covert S F, **Enkerli J**, Miao V P W, VanEtten H D (1996). A gene for maackiain detoxification from a dispensable chromosome of *Nectria haematococca*. Molecular and General Genetics 251: 397-406
- Clay R. P, **Enkerli J**, Fuller M S (1994). Induction and formation of *Cochliobolus sativus* appressoria. Protoplasma 178: 34-47
- Enkerli J**, Gisi U, Mössinger E (1993). Systemic acquired resistance to *Phytophthora infestans* in tomato and the role of pathogenesis related proteins. Physiological and Molecular Plant Pathology 43: 161-171
- Cheong J-J, Alba R, Côté F, **Enkerli J**, Hahn M G (1993). Solubilization of functional plasma membrane-localized hepta-β-glucoside elicitor-binding proteins from soybean. Plant Physiology 103, 1173-1182

### Book sections

- Inglis GD, **Enkerli J**, Goettel MS (2012) Laboratory techniques used for entomopathogenic fungi: Hypocreales. In: Lacey LA (ed) Manual of techniques in invertebrate pathology, 2nd edition. Academic Press New York, pp.189-253
- Enkerli J**, Nielsen C, Widmer F, Jensen A B (2007). Molecular genetic tools used to study Entomophthorales. In: Arthropod-pathogenic Entomophthorales: Biology, Ecology, Identification (ed. Keller S.) Office for official publications of the European Communities, Luxembourg. pp. 82-97
- Enkerli J**, Widmer F, Keller S (2004). Monitoring of biocontrol agents in the environment. In: The international workshop on entomopathogenic fungi, a valuable alternative to fight against insect pests (Ed. M.V. Deshpande). NCL Pune, 119-126
- Hahn M G, Cheong J J, Alba R, **Enkerli J**, Côté F (1993). Oligosaccharide elicitors: Structures and recognition. In: *Developments in plant pathology: Mechanisms of plant defense responses* (eds. Fritig B., Legrand M.). Kluwer Academic Publisher

### Other Research Articles

- Fernandez Bravo MC, Enkerli J (2020) Interactions of insect and soil microbial communities with insect pathogenic fungi. 'Results in Brief' European Commission CORDIS website
- Widmer F, Mayerhofer J, Gschwend F, Fernandez Bravo MC, Enkerli J (2020) Der verborgenen Biodiversität im Boden auf der Spur. Hotspot 42: 26-27.
- Strasser H, Mayerhofer J, Zotttele M, Enkerli J (2020) Metarhizium is the message - new IPM strategy to control larvae and adults of Diabrotica v. virgifera. IOBC/wprs Bulletin 150: 48-52
- Zotttele M, Gruber A, Enkerli J, Strasser H (2020) Influence of inundative mass application of Metarhizium brunneum BIPESCO 5 on indigenous Metarhizium strains in maize fields. IOBC/wprs Bulletin 150: 63-66
- Barzanti, G.P.; Enkerli, J.; Benvenuti, C.; Marianelli, L.; Paoli, F.; Sabbatini Peverieri, G.; Mazza, G.; Bosio, G.; Venanzio, D.; Giacometto, E.; Roversi, P.F. (2020). Preliminary analysis of genetic variability of Metarhizium isolates from Parco del Ticino (Northern Italy). IOBC/wprs Bulletin 150: 6-8
- Eckard S, Ansari M., Butt T, **Enkerli J**, Grabenweger G (2013) Biological control of wireworms with entomopathogenic fungi. IOBC/wprs Bulletin 90: 17-20
- Lutz A, Widmer F, Leuchtmann A, **Enkerli J** (2013) Cross-species transferability of 41 microsatellite markers for *Metarhizium* spp. IOBC/wprs Bulletin 90: 79-83
- Mayerhofer J, **Enkerli J**, Zelger R, Strasser H (2013) Monitoring of the entomopathogenic fungus *Beauveria brongniartii* in cockchafer infested areas of the Euroregion Tyrol. IOBC/wprs Bulletin 90: 21-25

- Dessimoz M, Michel V, **Enkerli J**, Widmer F (2011) Development of molecular diagnostics for characterization of *Verticillium* infestation in strawberry production systems IOBC/wprs Bulletin 70: 75-79
- Ehlers R-F, Crickmore N, **Enkerli J**, Glazer I, Kirchmair M, Lopez-Ferber M, Neuhauser S, Strasser H, Tkaczuk C, Traugott M (Editors) (2011). Proceedings of the 13th meeting of the IOBC/WPRS working group "Insect Pathogens and Insect Parasitic Nematodes", Innsbruck, Austria, 19 - 23 June, 2011. IOBC/WPRS Bulletin 66, 550 pages
- Schneider S, Jacot K, Widmer F, **Enkerli J** (2011). Investigation of *Metarhizium* spp. abundance in different habitat types based on cultivation-independent detection and quantification. IOBC/wprs Bulletin 66: 125-128
- Steinwender B M, Enkerli J, Widmer F, Eilenberg J, Meyling N V (2011) Molecular diversity of the *Metarhizium anisopliae* lineage in an agricultural field. IOBC/wprs Bulletin 66: 113-115
- Ehlers R-F, Crickmore N, **Enkerli J**, Glazer I, Lopez-Ferber M, Tkaczuk C (Editors) (2009). Proceedings of the 12th meeting of the IOBC/WPRS working group "Insect Pathogens and Insect Parasitic Nematodes", Pamplona, Spain, 22 - 25 June, 2009. IOBC/WPRS Bulletin 45, 519 pages
- Enkerli J**, Schwarzenbach K, Widmer F (2009). Biological control of the European cockchafer: Does *Beauveria brongniartii* have effects on fungal community structures in soil microcosms? IOBC/wprs Bulletin 45: 431-435
- Toepfer S, **Enkerli J**, Kuhlmann U (2009). Research needs and promising approaches for the biological control of *Diabrotica* and other emerging soil pests with pathogens or nematodes. IOBC/wprs Bulletin 45: 47-58
- Ehlers R-F, **Enkerli J**, Glazer I, Lopez-Ferber M, Tkaczuk C (Editors) (2008). Proceedings of the 11<sup>th</sup> meeting of the IOBC/WPRS working group "Insect Pathogens and Insect Parasitic Nematodes", Alés, France, 3 – 7 June, 2007. IOBC/WPRS Bulletin 31, 348 pages
- Enkerli J** (Editor) (2007). Proceedings of the 5<sup>th</sup> meeting of the IOBC/WPRS working group "Insect Pathogens and Insect Parasitic Nematodes" subgroup "Soil Insect Pests", Auer/Ora, Italy, 16-18 October 2006. IOBC/WPRS Bulletin 30(7), 154 pages
- Fournier A, Widmer F, Keller S, **Enkerli J** (2008). Assessing winter survival of *Pandora neoaphidis* in soil applying bioassay and molecular approaches. IOBC/wprs Bulletin 31 173-177
- Ghormade V, Jossi W, Chavan S, Rajendran A, Ghondhelekar A, Widmer F, Keller S, **Enkerli J** (2007). Evaluation of *Metarhizium anisopliae* isolates for biocontrol of Agriotes based on genetic, biochemical and virulence characters IOBC/wprs Bulletin 30 (7) 77-82
- Jensen A B, Fournier A, Widmer F, Keller S, Eilenberg J, **Enkerli J** (2007). Molecular tools to study natural occurrence, ecology and phylogeny of Entomophthorales. IOBC/wprs Bulletin 30(1) 99-105
- Enkerli J**, Schwarzenbach K, Keller S, Widmer F (2007). Development of a new cultivation independent tool for monitoring the *Beauveria brongniartii* biocontrol agent in the field. IOBC/wprs Bulletin 30(1) 107-110
- Hartmann M, Kölliker R, **Enkerli J**, Dubois D Widmer F (2006). Anbausysteme beeinflussen die Bodenbakterien. AgrarForschung 13: 494-499
- Enkerli J**, Moosbauer P, Widmer F, Dorn S, Keller S (2005). Isolation of *B. brongniartii* from soil: Are the available isolation tools neutral? IOBC/wprs Bulletin 28(2) 25-29
- Enkerli J**, Kessler P, Widmer F, Keller S (2005). Biocontrol of *Melolontha melolontha*: The fate of a *Beauveria brongniartii* biocontrol strain in the field. IOBC/wprs Bulletin 28(3) 105-108
- Keller S, **Enkerli J** Kessler, P (2003). Die biologische Bekämpfung von Bodenschädlingen. Schriftenreihe der FAL 45: 72-75
- Enkerli J**, Widmer F, Keller S (2002). Microsatellite markers in *Beauveria brongniartii*: a sensitive and efficient method for strain characterisation and identification. IOBC/wprs Bulletin 25(7) 91-96

#### Ph.D. Thesis (University of Georgia, Athens Ga, USA)

Enkerli J. (1997) Functional and structural analysis of a dispensable chromosome in *Nectria haematococca*. University of Georgia, Athens GA, USA