

Roland Kölliker

Comprehensive list of publications, grants and students

Publications

Peer reviewed publications

- Ruckle ME, Meier M, Frey L, Eicke S, **Kölliker R**, Zeeman SC, Studer B (2017) Diurnal leaf starch content: An orphan trait in forage legumes. *Agronomy* *accepted*
- Kempf K, Malisch CS, Grieder C, Widmer F, **Kölliker R** (2017) Marker trait association analysis for agronomic and compositional traits in sainfoin (*Onobrychis viciifolia*). *Genet Mol Res* 16:gmr16019483
- Hersemann L, Wibberg D, Blom J, Goesmann A, Widmer F, Vorhölter F-J, **Kölliker R** (2017) Comparative genomics of host adaptive traits in *Xanthomonas translucens* pv. *graminis*. *BMC Genomics* 18:35
- Malisch CS, Salminen J-P, **Kölliker R**, Engström MT, Suter D, Studer B, Lüscher A (2016) Drought effects on proanthocyanidins in sainfoin (*Onobrychis viciifolia*) are dependent on the plant's ontogenetic stage. *J Agr Food Chem* 64 (49), 9307–9316
- Kempf K, Mora-Ortiz M, Smith LMJ, **Kölliker R**, Skøt L (2016) Characterization of novel SSR markers in diverse sainfoin (*Onobrychis viciifolia*) germplasm. *BMC Genetics* 17:124
- Hersemann L, Wibberg D, Widmer F, Vorhölter F-J, **Kölliker R** (2016) Draft genome sequences of three *Xanthomonas translucens* pathovar reference strains (pv. *arrhenatheri*, pv. *poae* and pv. *phlei*) with different specificities for forage grasses. *Stand Genomic Sci* 11:50
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- Last L, Lüscher G, Widmer F, Boller B, **Kölliker R** (2014) Indicators for genetic and phenotypic diversity of *Dactylis glomerata* in Swiss permanent grassland. *Ecol Ind* 38:181-191
- Last L, Widmer F, Fjellstad W, Stoyanova S, **Kölliker R** (2013) Genetic diversity of natural orchardgrass (*Dactylis glomerata* L.) populations in three regions in Europe. *BMC Genetics* 14:102
- Herzog F, Jeanneret P, Amari Y, Angelova S, Arndorfer M, Bailey D, Balazs K, Baldi A, Bunce RGH, Chois JP, Dennis P, Dyman T, Eiter S, Fjellstad W, Fraser MD, Frank T, Friedel JK, Garchi S, Gejzendorffer I, Gomiero T, Jerkovich G, Jongman RHG, Kainz M, Kakudidi E, Kelemen E, **Kölliker R**, Kwikiriza N, Kovacs-Hostyanszki A, Last L, Lüscher G, Moreno G, Nkwine C, Opio J, Oschatz ML, Paoletti MG, Pointereau P, Riedel S, Sarthou JP, Schneider M, Siebrecht N, Sommaggio D, Stoyanova S, Szerencsits E, Targetti S, Viaggi D, Wilkes J, Wolfrum S, Yashchenko S (2013) Measuring Farmland Biodiversity. *Solutions* 4:52-58
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- Kölliker R**, Boller B, Widmer F (2005) Marker assisted polycross breeding to increase diversity and yield in perennial ryegrass (*Lolium perenne* L.). *Euphytica* 146: 55-65
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Book chapters

- Kölliker R**, Knorst V, Studer B, Boller B (2016) Single-marker assisted introgression of crown rust resistance in an Italian ryegrass breeding program. In: Roldán-Ruiz I et al. (eds) *Breeding in a World of Scarcity*. Springer International Publishing, Switzerland. 163-167
- Reheul D, Aper J, Amdahl H, Annichiarico P, Arts P, Baert J, Barre P, Beguier V, Boller B, Durand JL, Feuerstein U, Ghesquiere A, Ghesquiere M, Grieder C, Gylstrom K, Julier B, Kölliker R, Litrico I, Marum P, Pecetti L, Riday H, Sampoux JP, Schubiger F, Scotti C, Vleugels T, Wolters L (2016) Report of the breeding debate. In: Roldán-Ruiz I et al. (eds) *Breeding in a World of Scarcity*. Springer International Publishing, Switzerland. 313-319
- Last L, Boller B, Widmer F, **Kölliker R** (2014) Influence of management and habitat on genetic and phenotypic diversity of *Dactylis glomerata*. In: Sokolovic D et al. (eds) *Quantitative Traits Breeding for Multifunctional grasslands and turf*. Springer Science+Business Media Dordrecht, 91 - 95
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- Wichmann F, Widmer F, Vorhölter F-J, Boller B, **Kölliker R** (2012) Breeding for resistance to bacterial wilt in ryegrass: insights into the genetic control of plant resistance and pathogen virulence. In: Barth S and Milbourne D (eds) *Breeding strategies for sustainable forage and turf grass improvement*. Springer Science+Business Media, New York, 37-46
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- Isobe S, Boller B, Klimenko S, **Kölliker R**, Rana JC, Sharma TR, Shirasawa K, Hirakawa H, Sato S, Tabata S (2012) Genome-wide SNP marker development and QTL identification for genomic selection in red clover. In: Barth S and Milbourne D (eds) *Breeding strategies for sustainable forage and turf grass improvement*. Springer Science+Business Media, New York, 29-35
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- Kölliker R**, Boller B (2010) The role of genetic resources for sustainable and productive grassland agriculture. In: Schnyder H. et al. (eds) *Grassland in a changing world*. Proceedings of the 23 rd General Meeting of the European Grassland Federation Kiel, Germany, 29 August – 2 September. Mecke Druck und Verlag, Duderstadt, pp. 149-158
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- Peter-Schmid, M, **Kölliker R**, Boller B (2010) Genetic diversity of *Festuca pratensis* Huds. and *Lolium multiflorum* Lam. ecotype populations in relation to species diversity and grassland type. In: Runas J and Dahlgren T (eds) *Grassland Biodiversity: Habitat Types, Ecological Processes and Environmental Impacts*. Nova Science Publishers, New York, pp. 333-345
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- Kölliker R**, Boller B, Majidi M, Peter-Schmid MKI, Bassin, S, Widmer F (2008) Characterization and utilization of genetic resources for improvement and management of grassland species. In: Yamada T, Spangenberg S (eds) Molecular Breeding of Forage and Turf - The Proceedings of the 5th International Symposium on the Molecular Breeding of Forage and Turf pp 55-70
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Other publications

- Jaenicke S, Bunk B, Wibberg D, Spröer C, Hersemann L, Blom J, Winkler A, Schatschneider S, Albaum S, **Kölliker R**, Goesmann A, Pühler A, Overmann J, Vorhölter F-J (2016) Complete genome sequence of the barley pathogen *Xanthomonas translucens* pv. *translucens* DSM 18974T / ATCC 19319 T. Genome Announc 4:e01334-16
- Hersemann L, Wibberg D, Blom J, Widmer F, **Kölliker R** (2016) Draft genome sequence of the *Xanthomonas bromi* type strain LMG 947. Genome Announc 4:e00961-16
- Kölliker R**, Boller B (eds) (2016) Plant Breeding: the Art of Bringing Science to Life. Abstracts of the 20th Eucarpia General Congress, Aug 29 – Sep 1, Zurich, Switzerland
- Kölliker R**, Last L, Herzog F, Widmer F (2014) Genetische Diversität in der Landwirtschaft. Agrarforschung Schweiz 5:12-19
- Kölliker R**, Wichmann F, Vorhölter F-J, Conradin C, Reinhard S, Boller B, Widmer F (2013) Bakterienwelke – eine rätselhafte Krankheit von Futtergräsern. Agrarforschung Schweiz 4:32-39
- Wolfrum S, Kainz M, Arndorfer M, Bogers M, Bunce RGH, Dennis P, Dyman TN, Garchi S, Geijzendorffer I, Gomiero T, Herzog F, Jeanneret P, Jongman RHG, **Kölliker R**, Moreno G, Nkwiine C, Siebrecht N (2010) Report on the potential applicability of BioBio indicators beyond Europe – exemplified for three ICPC case study regions (Ukraine, Tunisia and Uganda). Munich, Deliverable 2.3 of the EU FP7 Project BioBio
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- Pointereau P, Sarthou J.-P, Siebrecht N, Sommaggio D, Stoyanova S. D, Teufelbauer N, Viaggi D, Vialatte A, Walter T, Widmer F, Wolfrum S. (2009) Conceptual foundations for biodiversity indicator selection for organic and low-input farming systems : Deliverable 2.1 BioBio FP7 project 227161
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- Hartmann M, Fliessbach A, **Kölliker R**, Enkerli J, Dubois D, Widmer F (2006). Anbausysteme beeinflussen Bodenbakterien. *Agrarforschung* 13: 494-499.
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- Herrmann D, Boller B, Widmer F, **Kölliker R** (2003) Genetic characterisation and potential origin of Swiss red clover landraces (*Trifolium pratense* L.) *Czech J Genet Plant Breed* 39:120-124
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- Carlen C, Gex P, **Kölliker R** (1998) Permanent meadow in mountain regions: effects of management on forage quality, dry matter production of the sward, botanical composition and genetic variability of natural populations. *Herba* 11:17-23

Presentations at conferences

Oral presentations

- Kölliker R**, Malisch C, Kempf K, Lüscher A (2016) Improving performance and tannin content of the forage legume sainfoin (*Onobrychis viciifolia*). *Plant Breeding: the Art of Bringing Science to Life: 20th Eucarpia General Congress, Aug 29 – Sep 1, Zurich, Switzerland*
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Patent Application

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Project Funding

2017 – 2020	"EUCLEG - Breeding forage and grain legumes to increase EU's and China's protein self-sufficiency, EU H2020-SFS-2016-2 (€ 645'997)
2016 – 2020	"Genomic methods to detect genetic diversity in grassland", Swiss Federal Office for Agriculture (CHF 343'000)
2014 – 2018	"Composition and putative function of the microbiome of forage grasses" Agroscope Research Programme "Microbial Biodiversity" (CHF 207'000)
2012 – 2016	"Bacterial wilt in ryegrass: targeted characterisation of virulence factors and resistance genes", SNF No. 31003A_13858 (CHF 438'000)
2012 – 2015	"LegumePlus ^{Plus} - Optimising plant polyphenols in legumes for ruminant nutrition plus health plus environmental sustainability", EU FP7-PEOPLE-2011-ITN (leader wp4, € 240'000)
2009 - 2012	"BioBio - Indicators for biodiversity", EU FP 7 Project 2271611 (task group leader; € 150'000)
2007 – 2010	"Genetic and morphophysiological characterization of the <i>Xanthomonas translucens</i> pv. <i>graminis</i> - <i>Lolium multiflorum</i> interaction", SNF No. 3100A0-112582 (CHF 296'000)
2005	JSPS Invitation Fellowship Program for Research in Japan (Short-Term), Japan Society for the Promotion of Science (CHF 15'000)
2004 – 2008	"Molecular and phenotypic diversity of Swiss <i>Festuca pratensis</i> Huds. and <i>Lolium multiflorum</i> Lam. ecotype populations from contrasting permanent grassland habitats", Swiss Federal Office for Agriculture (CHF 130'000)
2002 – 2006	"Molecular characterization of resistance to bacterial wilt in Italian ryegrass (<i>Lolium multiflorum</i> Lam.)", SNF No. 3100-065417 (CHF 197'000)
2001 – 2006	"Genetic characterisation of Mattenkleee landraces and cultivars", Swiss Federal Office for Agriculture (CHF 130'000)
1998	Fellowship for prospective researchers for the project "Development of simple sequence repeat (SSR) loci for marker assisted breeding in white clover", SNF (CHF 150'000)

Students supervised

PhD theses

- Miguel Loera (2016 – 2020, ETH Zurich) "Genomic methods to detect genetic diversity in grassland"
- Martina Birrer (2014 – 2018, University of Zurich) "The leaf microbiome of *Lolium* spp."
- Verena Knorst (2012 – 2017, University of Zurich) "Targeted characterisation of resistance genes in *Lolium multiflorum*"
- Katharina Kempf (2012 – 2016, ETH Zurich) "Development of molecular tools for targeted improvement of sainfoin (*Onobrychis viciifolia*)"
- Lena Hersemann (2012 – 2016, University of Zurich) "Characterisation of virulence factors in *Xanthomonas translucens* pv. *graminis*"
- Luisa Last (2009-2013, ETH Zurich) "Plant genetic diversity in conventional and organic agriculture"
- Fabienne Wichmann (2007-2011, University of Zurich) "Genetic and morphophysiological characterization of the *Xanthomonas translucens* pv. *graminis*–*Lolium multiflorum* interaction"
- Bruno Studer (2002-2006, University of Zurich) "Molecular characterisation of resistance to bacterial wilt and crown rust in Italian ryegrass (*Lolium multiflorum* Lam.)"
- Doris Herrmann (2001 – 2005, University of Zurich) "Characterisation of genetic diversity and molecular dissection of seed yield and persistence in Swiss Mattenkleee (*Trifolium pratense* L.)"
- Madlaina Schmid (2003 - 2008; co-supervisor, ETHZ) "Molecular and phenotypic diversity of Swiss *Festuca pratensis* Huds. and *Lolium multiflorum* Lam. ecotype populations from contrasting permanent grassland habitats"
- Martin Hartmann (2003-2007; co-supervisor, ETHZ) "Genetic characterization of soil bacterial communities in the DOK long-term agricultural field experiment – Influences of management strategies and crops"
- Irene Jacob (visiting PhD student 2011, Bavarian State Research Center for Agriculture, Germany) "Genetic characterisation of anthracnose resistance in red clover"
- Fatemeh Amini (visiting PhD student 2009-2010, Isfahan University, Iran) "Genetic characterisation of tall fescue breeding germplasm"
- Marja Petrova (visiting PhD student 2007-2008, Institute of Plant Genetic Resources, Sadova, Bulgaria) "Genetic diversity of Swiss and Bulgarian meadow fescue populations"
- Mahdi Majidi (visiting PhD student 2006-2007, Isfahan University, Iran) "Influence of ex situ conservation on genetic diversity of meadow fescue"

Bachelor / master theses

- Milena Scandella (Master thesis University of Basel, 2016-2017) "Anthracnose resistance in red clover"
- Magdalena Wey (Bachelor thesis ETHZ 2016) "Genetic diversity of sainfoin"
- Luca Costa (Bachelor Thesis ETHZ 2013) „Genetische Untersuchungen des Polyphenol-Stoffwechselweges in *Onobrychis viciifolia*“
- Severin Kislinger (Bachelor Thesis ZHAW 2013) "Molekulargenetische Charakterisierung des Raigras-Pathogens *Xanthomonas translucens* pv. *graminis*"
- Sara Lüscher (Master Thesis ETHZ 2011) "Characterization of *Pantoea* spp. associated with forage grasses"
- Denise Portmann (Semester Thesis ETHZ 2009) "Genetic characterisation of Italian ryegrass genotypes with varying levels of resistance to bacterial wilt"
- Constanze Conradin (Semester Thesis ETHZ 2009) "Generation and characterisation of hrp mutants of *Xanthomonas translucens* pv. *graminis*"
- Bernhard Müller (Master Thesis University of Zurich 2006-2007) "Race specificity of *Xanthomonas translucens* pv. *graminis*"
- Salome Schneider (Diploma Thesis ETHZ 2006) "Genetic diversity of *Passiflora* spp."

Beat Reidy (Diploma Thesis ETHZ 1997) "Genetic variability of forage grasses - comparison of cultivars and species"

Pierre Berset (Semester Thesis ETHZ 1995) "Variability of meadow fescue ecotypes"

Trainees

Nino Giacomelli (2013) "The role of silicon in disease resistance of ryegrasses"

Marius Liesch (2009) "Genetic characterisation of *Lolium multiflorum* x *Xanthomonas translucens* pv. *graminis* interaction"

Sebastiano Pron (2007) "Analysis of genetic diversity in Kudzu (*Pueraria* spp.)"

David Schneider (2004/05) "Genetic diversity of *Plantago lanceolata* populations"

Markus Rechsteiner (Nachdiplompraktikum 2003/04) "Analysis of gene expression in Italian ryegrass during bacterial wilt infection"

Christine Creton (Nachdiplompraktikum 2003) "Genetic characterisation of *Centaurea jacea* genotypes with varying sensitivity to ozone"

Rolf Krähenbühl (2001/02) "Genetic diversity of the plant pathogen *Xanthomonas translucens* pv. *graminis*"