

MSCA Postdoctoral Fellowship at Eurac Research Call 2024

List of topics and research fields

You are welcome to propose your own MSCA Postdoctoral Fellowship project idea. Some of our institutes and researchers willing to serve as supervisors have, however, also indicated topics and research fields that they are particularly interested in working with. If you wish to work on one of these topics/research fields, we ask you to indicate the corresponding topic number in the expression of interest.¹

Topic 1	
Name of the supervisor	Marco Mina
Institute	Institute for Alpine Environment
Research field	Forest ecology, ecological modelling
Brief description	<p>Forests are key elements in mountain landscapes and provide essential ecosystem services but are, however, threatened by rapid climate and environmental changes. The research topic focuses on studying the current and future dynamics of mountain forests under the impact of climate change and increasing natural disturbances in South Tyrol.</p> <p>The aim of the research is to combine multiple methodologies such as analysis of large-scale forest inventory data with species distribution models and dynamic forest landscape models to assess how forest types are going to shift under future climate scenarios at a regional scale (i.e., South Tyrol). A second aim would be to assess how forest management for maximizing different ecosystem services can be adapted to cope with climatic and disturbance changes in a set of representative areas across the region.</p> <p>The research will also lead to potential practical outcomes for management and decision making at regional level.</p>

¹ More information under <https://www.eurac.edu/en/research-support/marie-sklodowska-curie-week>

Topic 2	
Name of the supervisor	Egon Stemle
Institute	Institute for Applied Linguistics
Research field	Machine learning and terminology
Brief description	<p>The research topic lies at the interface between translation technology (NMT, GPTs) and lesser-used language varieties. The standard variety of German in South Tyrol differs from the varieties used in countries where German is a majority language, viz. in terms of legal terminology. In South Tyrol, there is also a large set of legally-binding terms that is mandatory for public institutions.</p> <p>Translation in multilingual communities ensures equal access to information and services, upholding fundamental language rights. However, as generic translation tools are not typically finetuned to minority languages, their application risks misrepresenting local legal terminology. To allow for the use of modern translation technology within local public institutions, it is therefore necessary to study how well local terminology is reflected by generic and customised translation tools, evaluate terminology errors and find the best strategy to address the problem. Machine-learning (and German) skills are required.</p>

Topic 3	
Name of the supervisor	Fabiola Del Greco M.
Institute	Institute for Biomedicine
Research field	Biostatistics/Epidemiology/Computational statistics
Brief description	<p>Improving public health is the ultimate goal of biomedical research. Causal inference - how specific biomarkers, treatments, and other exposures could affect disease outcomes - dominates the great majority of clinical and public health research investigations, for its key role in the making decisions process.</p> <p>Non-randomised observational data from the Cooperative Health Research in South Tyrol (CHRIS) study, along with its wealth of phenotypic, molecular (e.g. metabolomics, proteomics), and genetic data (e.g. genotypes, whole-exome sequencing), represents an unique resource for investigating causalities. It offers the potential to tackle the most recent challenges of making causal inferences in healthcare applications, such as processing high-dimensional and complex structured data, by incorporating more advanced analytical methods like machine learning.</p>

Topic 4	
Name of the supervisor	Roberto Melotti
Institute	Institute for Biomedicine
Research field	Statistical learning / epidemiology / genetic epidemiology
Brief description	The research focuses on the genetic-epidemiological and statistical modelling of ~55K digital Archimedes' spirals from ~11K participants of the longitudinal, population-based Cooperative Health Research in South Tyrol (CHRIS) study to identify early biomarkers and latent profiles of tremor symptoms spectra, which may constitute prodromal signs or symptoms of neurodegeneration. The CHRIS study, along with its wealth of phenotypic, molecular (e.g. metabolomics, proteomics), and genetic data (e.g. genotypes, whole-exome sequencing), represents a vast, multidimensional, and unique resource to explore features of tremor across time. Additional independent clinical records on essential tremor and Parkinson disease patients and controls, which used the same Archimedes' spiral template, may aid clinical interpretation and further knowledge in the field.

Topic 5	
Name of the supervisor	Cristian Pattaro
Institute	Institute for Biomedicine
Research field	Genetic Epidemiology / Statistical Genetics / Bionformatics
Brief description	Interest lies in statistical and computational methods that may help identify the molecular determinants of complex traits. The main applications concern kidney function, cardiovascular health, and the immune system. Methodological problems of interest arise from, but are not limited to, the areas of: large-scale, multi-ancestry, genome-wide association study meta-analyses; whole-genome and whole-exome sequencing studies; multiomics data integration; modelling of non-conventional phenotypes, including censored and mixture traits; causal inference leveraging genetic data.

Topic 6	
Name of the supervisor	Marzia De Bortoli
Institute	Institute for Biomedicine
Research field	Cardiac Biology (Translational human models group)
Brief description	The research field focuses on genetic and molecular mechanisms of cardiac inherited diseases by using human cells. Cardiac fibroblasts obtained from surgical biopsies of patients and induced pluripotent stem cells (iPSCs), that are generated from blood samples. The iPSCs are then differentiated into cardiomyocytes (iPSC-CMs). There is a transition from 2D to 3D cultures facilitated by the implementation of engineered heart tissues (EHTs), which together

	with multi electrode array (MEA) system, will provide technical support to study mechanical and electrical activities of iPSC-CMs. The research also explores RNA therapeutic approaches using lncRNAs, which can restore the necessary amount of proteins in haploinsufficiency condition. Finally, efforts are directed towards obtaining different cardiac cells from iPSCs with the goal to create a more faithful EHT.
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Topic 7	
Name of the supervisor	Karl Kössler
Institute	Institute for Comparative Federalism
Research field	Law and political science
Brief description	<p>Our research is focused on how territories are organized in multiple levels of government (local, subnational, national and European), thus ensuring autonomy of these levels and at the same time their integration through mechanisms of intergovernmental relations. Our work thereby looks at the autonomy and integration not only of subnational entities (like regions, cantons, etc.) but also of local governments.</p> <p>These topics remain highly relevant because ethno-cultural diversity, as well as territorial diversity (regarding the geographical location of subnational and local entities, and their respective demographic, economic and political weight) are essential characteristics of any country. These facets of diversity are two main drivers for arrangements of multilevel government and for a trend towards increased intergovernmental cooperation.</p>

Topic 8	
Name of the supervisor	Alice Valdesalici
Institute	Institute for Comparative Federalism
Research field	Law, in particular Comparative Constitutional Law, EU Law
Brief description	<p>Our research focuses on the allocation of powers and responsibilities among and within the different levels of government of federal systems, also including intergovernmental relations, within and beyond formal institutions. Different policy areas are explored from 'a governance perspective'. Fiscal federalism and environmental issues such as dealing with the climate change and other challenges are the major areas of investigation, but migrant integration, language policies, digitalization, education, and healthcare are also areas of expertise. These are addressed from a comparative perspective including federal systems around the globe through an extended understanding of federalism as including the level above the State, i.e., international and supranational organizations (in particular the EU and cross-border cooperation), and the level below, i.e., local government.</p>

Topic 9	
Name of the supervisor	Elisabeth Alber
Institute	Institute for Comparative Federalism
Research field	Political science and law
Brief description	<p>We investigate institutional and democratic innovations to renew and complement decision-making processes in federal democracies and decentralized (conflict-affected) contexts. And we study participatory governance in border areas, with a focus on cross-border cooperation in Europe.</p> <p>Our research focuses on the diagnosis of the challenges to plural decision-making in multi-level (divided) systems, on deliberative constitutionalism and on participatory Constitution-making. We combine constitutional federalism, i.e. the constitutional allocation of powers, resources, and competences, with the understanding of federalism and decentralized forms of government as a resilience-enhancing governance tool that addresses societal pluralism, multilingualism, and democratic backsliding.</p> <p>In short, we investigate the relation between federalism and democracy, and its empirical manifestations: the institutionalization and embeddedness of democratic innovations, and links to intergovernmental relations.</p>

Topic 10	
Name of the supervisor	Francisco Javier Romero Caro
Institute	Institute for Comparative Federalism
Research field	Law, economy, political science
Brief description	<p>In the discourse on multilevel governance, the notions of federalism and autonomy emerge as pivotal themes. Central to this discussion is the distribution of powers between central and regional authorities, a mechanism aimed at fostering autonomy while preserving a unified national framework. Integral to this conversation is the examination of secession claims and the territorial integration of national minorities, with reference to contexts such as Canada and Spain. Here, the challenge lies in addressing the balance between regional autonomy and national unity, amidst minority demands for independence. Additionally, the territorial distribution of powers within federal or multilevel systems occupies a significant focus, necessitating a thorough analysis of competence allocation to ensure governance effectiveness across different tiers. Finally, fiscal federalism and diversity accommodation emerge as crucial facets, as they underscore</p>

	the intricate interplay between fiscal policies and diversity management, highlighting mechanisms to accommodate diverse regional needs within a federal framework.
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Topic 11	
Names of the supervisors	Katharina Crepaz, Josef Prackwieser
Institute	Center for Autonomy Experience
Research field	Political science, history, philosophy, sociology, anthropology
Brief description	The term “minority” has been the subject of interdisciplinary debate for a long time, and a shared definition is still lacking. While contexts with national or linguistic minorities tend to use the term to emphasize cultural difference, other societies employ it to denote marginalized groups and possible subsequent inequalities. In addition, the term’s meaning has also changed over time. Minorities seem to share the struggle for recognition of difference and protection, however, whether the term is seen as empowering or exclusionary (“minoritization”) differs across contexts. We would like to take an interdisciplinary look at the term minority, and to investigate if it could be used to denominate shared experiences of marginalized groups, or if we need a new framework for diversity representation. We welcome theoretical and empirical project ideas and interdisciplinary perspectives, including but not limited to the term’s changing use, its exclusionary or inclusionary potential, and possible new shared definitions for “minority” as a concept.

Topic 12	
Name of the supervisor	Andrea Carlà
Institute	Institute for Minority Rights
Research field	Political science
Brief description	The research topic lies at the intersection of ethnic politics, migrant integration, and security studies. Minority issues have long been interlinked with security considerations. A proper understanding of this link is required in order to govern increasingly diverse societies. In this light, it is necessary to analyse processes of securitization of (old/national/ethnic/religious) minorities and/or migration (e.g. why, how, when they occur and so on) and how to counter such type of processes (through e.g. desecuritization, emancipation, resilience ...). Alternatively, scholars should examine various other ways security concerns intersect with minority issues and/or migration issues and the fostering of integrated societies.