

Implementation Plan **2014-2015**

Joint Programming Initiative
A healthy diet for a healthy life





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March 2014

Abbreviations

CSA	Coordination and Support Action
DEDIPAC	European trans-disciplinary research network on Determinants of Dietary and Physical Activity Choices (first Joint Action JPI HDHL)
EC	European Commission
ENPADASI	European Nutritional Phenotype Assessment and Data Sharing Initiative
ERA	European Research Area
HDHL	Healthy Diet for a Healthy Life
JPI	Joint Programming Initiative
KH	Knowledge Hub
MB	Management Board
MS	Member States
RA	Research Area
SAB	Scientific Advisory Board
SHAB	Stakeholder Advisory Board
SRA	Strategic Research Agenda

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Introduction

To deliver on the vision, the strategy and the strategic goal of the Joint Programming Initiative ‘A Healthy Diet for a Healthy Life’ (JPI HDHL), a structured and holistic Implementation Plan is required. Having launched the first Joint Actions it is now time to develop such an Implementation Plan reflecting the Strategic Research Agenda (SRA) which was published in June 2012 and signed by all the Member States (MS) on the Management Board (MB) of the JPI HDHL¹.

Our vision – The vision of the JPI HDHL is that by 2030 all Europeans will have the motivation, ability and opportunity to consume a healthy diet from a variety of foods, have healthy levels of physical activity and that the incidence of diet-related diseases will have decreased significantly.

Our strategy – Joint programming will contribute significantly to the construction of a fully operational European Research Area (ERA) on the prevention of lifestyle- and diet-related diseases by aligning our national research policies and programmes, by enhancing networking and communication amongst the stakeholders in the field of food, nutrition and health and by launching joint calls. We will strengthen leadership and competitiveness of the food industry by effectively integrating research in the food-, nutritional, social and health sciences, we will increase knowledge and deliver innovative, novel and improved concepts and products.

Our strategic goal – To change dietary patterns based on developments in food, nutritional, social and health sciences, and to develop science-based recommendations and innovative product formats that will, together with concomitant changes in physical activity, have a major impact on improving public health, increasing the quality of life and prolonging productive life.

The process of implementation has already begun with the launch of three Joint Actions aligned to the three Research Areas (RAs) of the SRA. But there is much more to do to fully realise our vision. This 1st Implementation Plan presents the roadmap for the next two years: 2014-2015. During these two years, this plan describes how the JPI will achieve the remaining short-term goals (2012-2014) outlined in the SRA. The current Implementation Plan is also cognisant of the process for developing the European Commission’s Strategic Programmes and Work Programmes for Horizon 2020. The 2nd Implementation Plan will be drafted in line with the update of the SRA to coincide with the development of Horizon 2020 and to facilitate future planning for research investments at MS level.

1 Spain signed the SRA with a caveat

Alignment: understanding and achievements

What do we understand by alignment?

Alignment of national research policies and programmes is the core activity of the JPI HDHL. This process is essential if we are to address the research challenges outlined in the SRA which will enable the goals to be achieved. There are many ways to achieve alignment – depending on the stage of development of the different research areas – eg. through co-ordination of (new) research activities; networking of existing projects; data-sharing; sharing of infrastructure; strategic collaboration with other projects and initiatives; training and mobility of researchers and foresight activities.

In the SRA primary initiatives were described for the periods 2012-2014; 2015-2019; and for 2020 and beyond and divided into three RA. These primary initiatives were approved by the countries involved in the MB for each of the three RAs shown in figure 1.

In 2012, the JPI HDHL set up a number of taskforces to begin the process of alignment of research activities amongst the MS in each of the three RAs. In RA 1, the DEDIPAC Joint Action was successfully launched and a consortium awarded funding. In RA 2 the Biomarker Joint Action was launched and the call will be published early 2014. In RA 3, a Joint Action on Nutritional Phenotype (ENPADASI) was launched and the call was published in February, 2014.

Figure 1

Diagram of the three Research Areas defined in the SRA of JPI HDHL



This 1st Implementation Plan presents the roadmap for the next two years: 2014-2015. During these two years, this plan describes how the JPI will achieve the remaining short-term goals (2012-2014) outlined in the SRA.





Ensuring the
healthy choice
is the easy choice
for consumers



Moving towards the ERA in the area of Nutrition and Health

The alignment of national research policies is at the heart of achieving the ERA. The European Commission (EC) has set up an expert group to help in achieving the ERA by 2014. All MS have signed up to this goal². JPIs so far have all made good progress, the degree of progress depending on the individual base from which they started, and this was recognized by the EU Expert Group on Joint Programming. The report of the group³ states ‘the most significant challenge for Joint Programming remains that of aligning national programmes and implementing multi-annual joint programmes’. The report also states ‘the challenge remains to achieve multi-annual programming, and not just individual calls’.

Joint Programming is one means of achieving the ERA however the political challenge, the issue of sustainability of resources and science as well as the organisational changes required to achieve the ERA should not be underestimated. There is a need for the EC and the JPIs to continue to work together to fully realise the ERA. The JPI HDHL MS in collaboration with the EC and adjoining initiatives, will seek to achieve the ERA on the area of Nutrition & Health with a specific focus on developing ways to address the challenges described in the Expert Group Report. The 2nd international conference of JPI HDHL (28th of March 2014) is an important step in this approach.

How to align national research activities?

Joint programming is not just about initiating new calls for research; it is about alignment and co-ordination of national research activities. A significant amount of research on nutrition and health is already taking place within countries. Alignment of these activities will increase the impact of MS individual efforts to resolve the global societal challenge that the JPI HDHL is addressing.

To achieve alignment, three aspects require serious consideration and effort from the MS:

- 1 The first step is the adoption by the MS, in part or in full, of the JPI’s SRA. If the MS adopt the relevant components of the JPI HDHL SRA as their national SRA, this would go a long way to achieving alignment. We are aware that not all MS involved have a national SRA but discussions at the national level with all relevant parties are essential to align national research activities. It is up to countries to decide which approach works best per country.
- 2 The scale and scope of the global challenges identified by JPIs is such that no single national programme can address them adequately. Historically such challenges have been supported by different funding bodies with different mandates and paymasters. The JPI HDHL examines the relationship between diet and population health with the overarching vision to reduce the incidence of diet and lifestyle related diseases by 2030. In most MS, the research programmes that support the research activities relevant to the JPI are not aligned or even managed in a collaborative way⁴. Alignment has been challenging as it requires collaboration between stakeholders nationally in the first

2 Council Conclusions on the ERA

3 2012 report

4 ‘Current practices and experiences in the area of FOOD and HEALTH research’ report from the Health and Food Expert Group, http://ec.europa.eu/research/bioeconomy/pdf/ki3111378enc_002_en.pdf

instance, and a recognition of the value of that collaboration, before any coordination of research programmes at a European level can occur. MS within the JPI MB should encourage and promote the alignment of the research at national level.

- 3 Full alignment of national research programmes with the JPI HDHL SRA also requires the consideration of how to align institutional funding where possible. It is recognised that research activities at MS level do not fully align with the JPI research objectives. The absence of comprehensive national databases detailing the JPI related research activities supported by institutional and competitive funding is also hindering implementation for some MS. Therefore mapping activities are critical in allowing a deeper understanding of the level of integration of food and health research at MS.

Examples of current alignment activities within JPI HDHL

In 2012 the first Joint Action of the JPI HDHL was launched: DEDIPAC (Determinants of Diet and Physical Activity Choice) KH (Knowledge Hub). This action is an excellent example of how a JPI can operate to bring different expertise together. DEDIPAC KH boosts the transnational co-operation, multidisciplinary and interdisciplinary networking collaboration and communication among researchers communities in the field of 'Determinants of diet and physical activity choice'. Within DEDIPAC KH, networks of selected research groups from JPI MS carry out joint multidisciplinary activities aiming to integrate biological, behavioural and social sciences expertise, knowledge, facilities and databases for a better understanding of how individual, social, and environmental determinants influence food and physical activity choices. Implementation strategies and innovative tools for collection, sharing and dissemination of research outcomes among all stakeholders in the field are an important aim of the programme. In DEDIPAC 46 researcher groups participate from 12 different countries.

The second and third Joint Actions of the JPI focus on biomarkers and nutritional phenotype assessment and data sharing. These actions make use of the experiences with DEDIPAC KH so far, but also tackle new challenges.

The focus of the Biomarkers Joint Action is the development of a specific European Research Network on **Biomarkers in Nutrition and Health (BioNH)**. The scope of the Joint Action is to define and harmonise the methodology necessary to prove the nutritional effects in the development of foods. The intake of foods, food ingredients and food contaminants in a population is a major challenge and questionnaire technology may lead to biased results. Dietary patterns may be even more complicated. Exposure biomarkers covering a broad number of foods and food components may provide a more objective measure of actual intake and status and will be an important adjunct to classical dietary data. However only few foods are covered by validated intake/exposure biomarkers. One of the main applications of dietary biomarkers is to use them as a reference measurement to assess the validity and accuracy of dietary assessment methodologies.

The goal of the **European Nutritional Phenotype Assessment and Data Sharing Initiative (ENPADASI)** is to carry out joint trans- and multidisciplinary activities aiming at the standardisation of data collection, storage and management through the development of a common methodology and a shared ICT infrastructure. This initiative will offer an open access tool for all future mechanistic, intervention and epidemiological studies providing the

highest level of standardisation of all phenotypic information of study subjects with regard to diet, physical activity levels and all biological, clinical and physiological measurements that define human body responses in health and disease states. Emerging technologies relevant for nutrition and food research and biomarker discovery should be actively incorporated in the standardisation efforts and workflow pipelines. Developments in bioinformatics and systems biology need to be tailored to nutritional research needs and incorporated. Nine countries have signed the MoU for this Joint Action.

Next steps in alignment

There is no doubt that the MS are constrained by declining resources. Joint Programming can alleviate some of these resource constraints by sharing the effort required and at the same time reduce the duplication of research; ensure that research funds are directed towards excellent science; and that the output of that science can underpin future policy developments to help reduce the incidence of diet and lifestyle related diseases in Europe and across the world. Alignment of national research programmes requires innovative approaches which are outlined in the following chapters.

Instruments for alignment, collaboration & communication

Implementation of the SRA will require the development of multiple simultaneous actions to achieve, support and promote the building of a common ERA on the interplay of nutrition/life styles/health and to impact the choices of the national health policies in the areas of wellbeing and disease prevention. Sharing and integration of knowledge as well as data harmonization in selected areas are required to achieve such ambitious challenge and to avoid duplication of efforts and initiatives. Therefore, a major effort of the JPI HDHL will be the establishment and implementation of strategic collaborations amongst JPI members with other EU initiatives and with non-EU Countries.

Instruments to promote alignment and collaboration

Given the vast diversity of European and the rest of the world systems for funding research and for adopting policy strategies, alignment of national programmes and identification of common public policies represent a real challenge to JPIs. Therefore, several instruments should be explored and implemented in order to promote collaborations. These include:

- Knowledge Hub that associate research, networking and capacity building already successfully established by other JPIs and by the JPIHDHL for its first Joint Action on ‘Determinants of Diet and Physical Activity (DEDIPAC Knowledge Hub)’;
- Networks that will focus on:
 - Innovation and enabling technologies
 - Research infrastructures
 - Emerging RA that require large collaboration efforts for data sharing
 - Policy strategies for wellbeing and disease prevention
- Joint calls supported by the JPI members or by the JPIHDHL with Horizon 2020.

This Implementation Plan describes current and future Joint Actions that have been indicated by the MB, with support of the Scientific Advisory Board (SAB) and the Stakeholder Advisory Board (SHAB), as the focus research items of JPI HDHL in 2014-2015. They will facilitate the process of alignment and the creation of a fully operational ERA. The selection of the most appropriate instrument for specific collaborations will have to be identified including (but not limited to) mapping exercises, workshops, and meetings/fora for discussion and consultation. It is important to monitor, understand and asses not only the current but also the medium- and long-term priorities of the MS to be able to identify both opportunities and gaps.

The choice of procedure mainly depends on how advanced the specific area of research is in the partner countries. From the 2nd Implementation Plan (2016-2017) onward, the planned actions will therefore be divided into three categories:

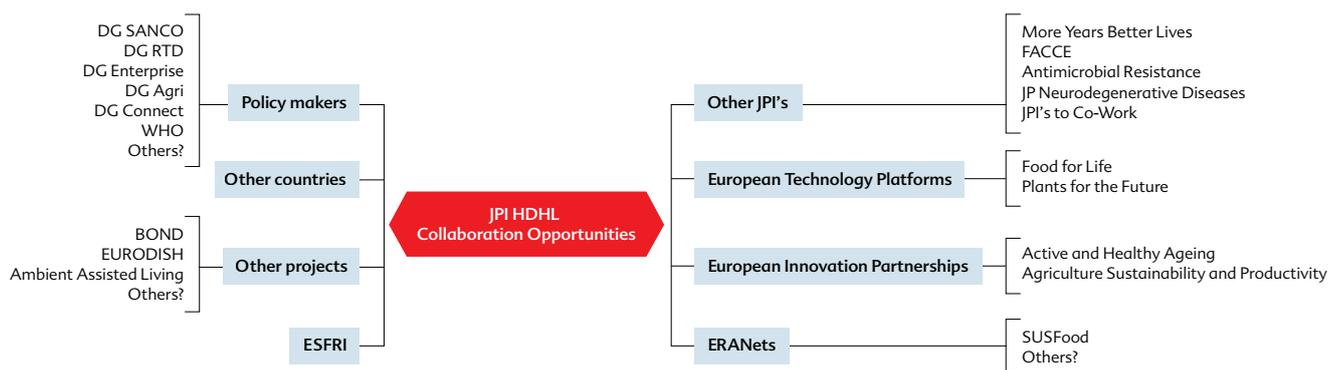
- 1 Networking (RAs that are already well covered in specific partner countries, but need more coordination and collaboration between JPI countries);
- 2 Investing (areas with need for greater funding efforts);
- 3 Exploring (for emerging RAs).

Strategic collaboration with other initiatives and third countries

The JPI HDHL is exploring collaborations with several relevant initiatives and will develop a Strategy and Action Plan on collaboration, including prioritization and evaluation criteria to be able to assess the possibilities to develop synergies through collaboration. Figure 2 represents the potential link between the JPI HDHL and a non- exhaustive list of other potential adjoining initiatives.

Figure 2

Diagram of potential links between the JPI HDHL and a non- exhaustive list of other potential stakeholder initiatives



Examples of such initiatives that the JPI HDHL has already engaged with include:

- ETP Food for life (etp.fooddrinkeurope.eu/asp/index.asp) and EIT-KIC Food4Future (www.foodbest.eu) for synergies in the thematic areas of RA 2 of the JPI SRA. Collaborations will focus on food quality and food production.
- Several ongoing European FP7 Projects including the ERA-Net, FAHRE (www2.spi.pt/fahre) and SUSFOOD (www.susfood-era.net) and Euro-Dish (www.eurodish.eu) that focus on the integration of existing food and health research infrastructures, as well as the development of new ones.
- Joint Programming Initiatives, in particular JPI FACCE (www.faccejpi.com) and JPI More Years Better Lives (www.jp-demographic.eu) that have some thematic areas and objectives closed to the JPI HDHL. But we can also learn from the experiences of other JPI's, for example JPND (www.neurodegenerationresearch.eu) addressing the challenge of neurodegenerative diseases and JPI AMR addressing the challenge to control antimicrobial resistance.
- Several ESFRI European Research Infrastructures including ECRIN (www.ecrin.org), BBMRI (bbmri.eu/it), ELIXIR (www.elixir-europe.org) and ISBE (project.isbe.eu), INFRAFRONTIER (www.infrafrontier.eu).

The objectives of the JPI HDHL SRA will require strong links to research infrastructures. To achieve this, the JPIHDHL will establish links to existing and emerging European research infrastructures and interactions with the European Strategy Forum on Research Infrastructures (ESFRI). The already established collaboration with the FP7 Project Euro-Dish, that is assessing the needs for food and health research infrastructures in Europe and will provide recommendations for ESFRI and other stakeholders, will be continued and strengthened. We strongly believe that it is important to use the existing infrastructures in the most optimal way. However, if it appears that an important infrastructure to facilitate JPI HDHL goals is lacking, the JPI HDHL will explore the development of such an infrastructure through collaboration with adjoining initiatives.

Furthermore the European Research Infrastructure section of Horizon 2020, work programme 2014-2015, include interesting topics dedicated to design studies, preparatory phase of ESFRI Projects or implementation and operation of cross-cutting services and solutions for clusters of ESFRI and other relevant research infrastructure initiatives⁵. Such EC instruments could facilitate the implementation of the JPI HDHL and its collaboration to research infrastructure.

At the 13th MB meeting of JPI HDHL (February 2014) several of the above mentioned initiatives were invited to present their challenges and activities and to provide and discuss suggestions for collaboration with JPI HDHL. The results of this network session have been summarized in a short paper available on the website of JPI HDHL. In addition a major part of the 2nd conference of JPI HDHL (28th of March 2014) is dedicated to stimulate networking with and among these relevant initiatives. This should result in a first draft of a Strategy and Action plan on collaboration. In addition to the collaboration with adjoining initiatives, the JPI HDHL MB agreed to allow participation of non-EU countries (Third Countries) within the JPI activities. This has already resulted in a full membership of Canada which is represented in the MB by the Canadian CIHR's Institute of Nutrition, Metabolism and Diabetes. New Zealand joined the JPI as an observer country and is represented in the MB by the Ministry of Business, Innovation & Employment. Collaboration with the US Program Biomarkers of Nutrition for Development (BOND)⁶ will be explored in 2014.

These activities and experiences – together with experiences of other JPIs (such as JPND) will deliver input for a task force that will be established to define a strategy on collaboration with adjoining initiatives and third countries.

5 See Annex II of the framework programme of Horizon 2020, INFRADEV-1-2014; INFRADEV-2-2015; INFRADEV-4-2014-2015

6 www.nichd.nih.gov/global_nutrition/programs/bond/pages/sponsoring-partners.aspx



Developing healthy,
high-quality, safe and
sustainable foods



Communication and building trustful long-term relationships

Communication and mutual trust is critical to the success and sustainability of the JPI HDHL. Through various tools, the JPI HDHL seeks to increase awareness of the challenges that the nutrition/life styles/health sector is facing worldwide by focusing resources and facilitating communication between:

- a The scientific community
- b Policy makers
- c Research funding bodies
- d Stakeholders/end users
- c Civil society

Target groups & strategy

The communication aims to encourage researchers and relevant funding agencies, stakeholders and policy makers to become involved in the JPI and its activities and will stimulate EU and non-EU collaborations with the JPI. Appropriate tools will be used to reach the broader scientific community, stakeholders, policy makers and funders and civil society.

The **scientific community** of the JPI HDHL is a multidisciplinary community that includes scientists from the food/nutrition and health sectors that should not only receive information about JPI HDHL actions and outputs but also actively contribute to the implementation of the JPI HDHL. The metadatabase interactive platform of the JPI HDHL, workshops and meetings will be used for communication and participation regarding JPI HDHL activities. In particular workshops will be organised by the JPI on the priority topics identified by the MB in collaboration with the SAB.

Communication with key **stakeholders**, including Non-Governmental Organisations, consumer associations, professional associations, the WHO, technology platforms, food industry, and clinicians will be very important for the development of prevention, product innovation and translational medicine strategies. The SHAB, which brings together representatives from European and international stakeholder organisations, will strongly contribute to the identification of short and medium-long term stakeholder needs and points of view and will advise the MB on the appropriate course of action to address these issues. In 2014-2015 interaction between the MB and the SHAB will be intensified to identify the issues on which JPI HDHL needs input and advice from the SHAB.

Through the participation of representatives of funding agencies in the MB, a dialogue with **funders** has been initiated. The JPI HDHL stimulates the funding agencies to develop research activities that are consistent with the JPI HDHL strategy and priorities. Though as indicated due to the scope of the global challenge that JPI HDHL faces, such challenges are supported within the MS by different funding bodies with different mandates and paymasters. Therefore in the second half of 2014 a meeting will be organized which focusses on the monitoring and assessing of the process of alignment of National Research Programs with the JPI HDHL.

Communication plan and tools

The Coordination and Support Action (CSA) work package dealing with communication has established a communication plan, communication tools and activities/products. Based on the experiences up until now the communication plan, including its tools and activities, will be revised in the 2nd quarter of 2014. The toolbox comprises:

- a The website
- b Newsletters
- c Scientific articles publications
- d Conferences
- e Thematic workshops
- f Seminars
- g Modern communication technologies (Twitter, Facebook etc)

An editorial board – with three MB members – has been established to enhance the quality and consistency of the communication on behalf of JPI HDHL. In addition the MB, in collaboration with the SAB and the SHAB, will apply innovative approaches to support a broad reach and to efficiently communicate and disseminate JPI activities and achievements. An important example of such an activity is the 2nd international conference of JPI HDHL (28th March 2014) which focusses on the 2nd phase of joint programming – implementation – and will bring together national and international stakeholders and adjoining initiatives to network and collaborate on finding solutions for the challenges the implementation phase will bring the JPI.

Joint Activities & synergy with Horizon 2020

Following the definition of the Vision, the first significant achievement of the JPI HDHL was to develop a SRA. This was achieved with substantial support and input from the SAB.

As presented in figure 1 (page 5), the SRA comprises three main RAs:

RA 1 Determinants of diet and physical activity:

ensuring the healthy choice is the easy choice for consumers.

RA 2 Diet and food production:

developing healthy, high-quality, safe and sustainable foods.

RA 3 Diet-related chronic diseases:

preventing diet-related chronic diseases and increasing the quality of life – delivering a healthier diet.

As described on pages 9-10 a Joint Action has been launched for each of the indicated RAs. Regarding the period 2014-2015 the MB – with support of the SAB and the SHAB – defined topics which will be the focus for the second phase of JAs. A task force will be established to prioritise the focus of the JAs in the period 2016-2017.

Focus research topics for joint activities JPI HDHL 2014-2015

RESEARCH AREA 1

Determinants of diet and physical activity

Ensuring the healthy choice is the easy choice for consumers

Public health can be improved through interventions targeting diet and physical activity. Therefore studies are needed which analyse the impact of different biological, psychological and socio-cultural factors on health.

Joint Action: DEDIPAC Knowledge Hub (DEDIPAC KH)

The overall objective of the ‘Determinants of Diet and Physical Activity Knowledge Hub’ (DEDIPAC KH) is to analyse how consumer decision making in context of diet and physical activity on health is influenced by individual, social, economic, cultural, gender, biological, environmental and policy factors. Moreover interdisciplinary approaches and integration of biological and social sciences will be promoted.

Proposed Action/ Instrument: coordination and bundling of existing research activities via Knowledge Hub

Timeline: The Knowledge hub started in December 2013, the public launch is scheduled for March 2014.

Future priority topic: Effectiveness of existing policies for lifestyle interventions

‘An important objective of future activities is to understand the determinants of diet choices and physical activity levels in a way that enables planning and implementing effective interventions, which will improve public health. The research is intended to deliver information, which will facilitate the development of interventions targeting improved health through better diet and lifestyle.’

Research conducted across Europe with focus on different relevant policy interventions has not been assessed and reviewed. This may lead to incomplete knowledge about the impact of different intervention types and strategies, and how their effectiveness varies in different cultural contexts and between demographic groups. A review of existing knowledge and of the impact of current practices in promoting healthy life styles with proper dietary choices and adequate physical activity levels is critically needed. It will enable the identification of the current limits of such programs but also allow the refinement in evidence-based decision making on lifestyle interventions. This will be the strong basis for integrative and coordinated European research and will ultimately lead to the development of harmonised European policies.

Expected impact. The effectiveness of policy interventions will be evaluated, and this knowledge will be used to improve future lifestyle interventions in the public health arena. In addition, future research needs in relation to gaps in existing knowledge will be defined. The results will deliver improved health across Europe, as well as increase the competitiveness of European industries by ensuring that policy implementation relating to labelling or pricing is appropriate and evidence based.

RESEARCH AREA 2

Diet and food production

Developing healthy, high-quality, safe and sustainable foods

The food industry is faced with the challenge of producing tasty foods that are consistent with health status and lifestyle, and which meet consumer preferences. This requires research to increase the understanding of food and diet compositions for optimal health, to develop new foods and to improve production, processing, packaging and proper food chain management.

Joint Action: Biomarkers in Nutrition and Health (BioNH)

Biomarkers are important as surrogate measures in studies on nutrition and health, in particular when dietary intake is difficult to monitor objectively, or the ultimate health effect cannot be measured due to length of time it takes to establish and be measurable. Any biomarker needs careful validation.

Timeline: the preparation of the Joint Action 2 has started; the call will be launched in March/April 2014; funding will start early 2015.

Future priority topic: Intestinal microbiomics

There is accumulating evidence that the microbiome of our intestinal tract not only plays an important role in food conversion but also affect our health. Apart from a limited number of higher EU level activities, there are a growing number of projects funded by the MS that address the area of the intestinal microbiome and study its composition and activity in health and disease. An integrated set of approaches is used, termed here intestinal microbiomics, which include a range of high throughput, (meta)biomics and reductionist approaches in human and model systems. Microbiome analysis is a new and rapidly developing area, there is a perceived need to not only learn from the different projects that are funded by the MS but also to benchmark the progress and develop common approaches. What is currently missing are studies that specifically and systematically address the role of the diet and dietary constituents on the microbiome including the effects of food matrix and food processing measures which at various levels can modulate microflora composition. This prioritized topic not only would promote scientific progress and make more efficient use of funds it also increases the competitiveness of European science in this area. Moreover, this may have an impact on the regulatory views on the intestinal microbiome and thus providing a sound basis for further industrial exploitation.

Future priority topic: Food models and Food processing

The principal beneficial aspects of food processing are food safety, improved functionality and prolongation of storage life. Another important beneficial aspect would be optimised digestibility and bioavailability of nutrients. European research on the composition of foods and food models, the effects of the food matrix and of food constituents in the human system will help innovative product development whilst also providing the basis for approved health benefits. The increased knowledge in nutrition and the rapid development of new technologies are a unique strength for European researchers and industry alike. Processing technologies, such as bioprocessing, can support formation of desired components with the food matrix including health-promoting components. Gentle food processing (applying minimum process intensity or using emerging technologies such as high hydrostatic pressure, pulsed electric fields, ultrasound, atmospheric plasma etc.) is a sustainable technology for the food industry and is also essential for delivering healthy diets. New (minimal) food processing technologies require a careful assessment of matrix effects on sensory aspects and nutrient availability in all attempts that target the effects of food constituents on biomarkers and human health. However, the development of innovative, healthy and nutritious food products that address consumer needs require further knowledge on the impact of processing on ingredients and on the functional characteristics of foodstuffs. A Joint Action in the area of food processing will be fully scoped out during this Implementation Plan.

RESEARCH AREA 3

Diet-related chronic diseases**Preventing diet-related chronic diseases and increasing the quality of life – delivering a healthier diet**

Effective nutrition and lifestyle-based strategies are needed to optimise human health and reduce the risk, or delay the onset, of diet-related diseases. These strategies require, for example, research efforts on obesity, its causes including neuroscience and its associated metabolic disorders; on maternal and infant nutrition; on osteoporosis and malnutrition in the elderly; on micronutrient deficiencies and cognitive development and decline.

Joint Action: European Nutritional Phenotype Assessment Data Sharing Initiative (ENPADASI)

Nutrient-gene interaction is important to understand the role of genes, nutrients and phenotypes in the initiation, development and progression of risk factors for diet-related chronic diseases. Pooling and implementation of already existing phenotypic data linked to genotypic and dietary data allows for searching for nutrient-gene interactions, which drive phenotypic changes.

Timeline: the call of the Joint Action is launched in February 2014. Start funding at the end of 2014/beginning 2015.

Future priority topic: Nutrition and cognitive function

‘It is well established that diet can have both a positive and a negative impact on our physical health and performance. Although significantly less scientific data are available, there are clear indications that the same holds true for our mental health and cognitive abilities. Several studies indicate that diet can influence brain and cognitive development in utero and in neonates, infants and young children. Food intake can also affect brain function (in all age groups) in terms of cognitive processes, mood, and brain performance. Reciprocally, brain function can affect components of food intake such as type of food and amount of energy consumed. Although the relationships between brain function and nutrition are still relatively poorly understood, it is generally accepted that the former does impact significantly on overall health and well-being.’

Recent advances in non-invasive technologies like fMRI gives new opportunities in assessing the effects of diet or diet components on processes in the brain that are crucial for regulation of energy balance and metabolic homeostasis. Determining how dietary factors affect brain, cognitive and metabolic function and performance in various life stages is a crucial element in defining the diet-disease relationship. In particular related to chronic neurodegenerative diseases this is most important for understanding on how diet acts upon cognitive decline.

Future priority topic: Identification, prevention and treatment of malnutrition

‘Numerous reports show that many people suffer from under-nutrition or malnutrition. This is also true for Europe, particularly in elderly patients, but this is a problem prevalent in all ages. Malnutrition can worsen the overall health condition and functionality. Among individuals admitted to hospitals one out of four is malnourished, which costs 50% more than ‘normal’ patients. Most of those not consuming their daily needs did not get any

substitution for the loss of energy protein and micronutrient intake. They take longer to recover from just about any disease and from surgery, run a higher risk of various types of complications and are also more likely to die.’

In home care patients, the prevalence of under-nutrition is estimated to range between 17 and 35%. Unfortunately, nutritional status is only assessed in 16% of the home care patients and in only 5% a validated screening instrument is used. The problem of malnutrition is higher in residents of nursing homes. They are fragile due to old age and, for instance, chronic illness. Research is needed to discover the factors that lead to a poor detection of individuals at risk of malnutrition, to test harmonized European standards, development and validation of screening instruments for quick and easy screening of malnutrition, plans to improve the medical nutrition therapy of patients of chronic diseases that do not compromise their nutritional status. Pilot projects of continuous data collection and feedback in different settings, from the community to the tertiary hospital, have started as local initiatives that need to be extended across Europe. Benchmarking between health care institutions will be possible with the evidence based selection of quality indicators of nutrition care. It is also imperative to gather information on the benefits achieved by specific measures to prevent and treat malnutrition. In this way, futile interventions will be avoided and effective approaches will be proposed for implementation through the different levels of care.

Implementing and aligning future joint actions

Defining Joint Action instruments & procedural harmonization issues

Mapping exercises, workshops and meetings will be utilised in order to choose the most appropriate instruments for the implementation of the identified Joint Actions as well as to establish specific collaborations. In addition with support of the CSA a survey will be conducted among the MS to enlarge the understanding when funding decisions are taken in the different MS. This knowledge will support to plan Joint Actions appropriately. In addition to addressing research challenges JPI HDHL wants to contribute to the implementation of the ERA by harmonizing general procedural issues where reasonable and possible. These are:

- Development of peer review procedures for the JPI HDHL;
- Development of common financial instruments for funding cross border research;
- Intellectual Property Rights (IPR) Policies, Open Access (publication, data).

To do so JPI HDHL successfully applied for funding from the EC for a Coordination and Supporting Action (CSA). These procedural harmonization issues are relevant for JPIs in general and will be backed by the overarching EU - project ‘JPIs to cowork’. Results from CSA and ‘JPI to cowork’ will be taken into account when implementing the proposed Joint Actions.

In nutrition research there is an increasing demand for European **multi centre and cohort studies** to collect relevant data for a range of aspects related to food, nutrition and health. To perform such studies a harmonisation process should be stimulated for example to enable the integration of data from different sources of origin. In its Joint Actions and other supporting activities (like workshops, conferences) JPI HDHL will address this issue. New funding measures for European collaborative research projects driven by MS could support this process as well as a call within the scope of Horizon 2020, where collaboration with ECRIN is recommended.

Foster synergy with EC, Horizon 2020

The MB, with the support of SAB and the SHAB, will investigate the opportunities offered by Horizon 2020. The Horizon 2020 Work Programme 2014-2015 identified highly multidisciplinary and broad thematic areas in its programme sections. In the Societal challenges section some topics⁷ are in line and/or complementary to priority RAs and challenges of the SRA and the specific focus of the current period (2014-2015). In Annex II of the framework programme Horizon 2020 a list of interesting topics to be considered is included, some of those could be relevant for the high priorities 2014-2015 indicated on pages 18-22. On the short term a Task Force will be established to develop and execute a strategy to facilitate participation and/or alignment of the priority topics of JPI HDHL with the Horizon 2020 Work Programme 2014-2015. In addition the priority topics of JPI HDHL in 2016-2017 and the possibilities for synergy with the upcoming Horizon 2020 Work Programme of this period will be identified.

Underpinning sectoral policies within Member States and the European Commission

To address the global societal challenge of diet related diseases and to deliver on the Vision of this JPI, there is an onus on all policy makers, both sectoral and research and innovation funding entities, to work together to develop a coherent and integrated approach. The JPI HDHL in the medium-long term can contribute to EU and national policies concerning research and innovation, food quality, nutrition, healthy diet, physical activity and disease prevention. In addition to the development of sectorial policies, the regulatory environment to facilitate innovative approaches to delivering solutions should also be considered. To achieve these objectives, appropriate instruments of communication involving the scientific community and national and European policy makers to discuss openly current and emerging issues is required. Therefore, communication along with collaboration instruments such as networking for connecting researchers, policy makers and other stakeholders will be fostered.

Moreover, the Joint Actions should have specific deliverables to facilitate the transfer of information from the Joint Action to the relevant policy makers within its MS and the EC. The support of the EC is required to identify the relevant policy makers who can take account of the outputs in their policy discussions. To achieve a coherent and appropriate policy and regulatory framework that will facilitate new solutions (scientific knowledge; products; processes and technologies) that can provide a response to the global societal challenge of chronic diet-related diseases JPI HDHL will hold (as a first step) a professionally facilitated panel debate on its 2nd international conference (28th of March 2014). A second step, will be to capture the outcome of the discussions at the debate and develop a set of actions that the JPI HDHL can, in collaboration with the EC and MS, address through a number of different channels using the framework of Europe 2020 and its flagship initiatives. Possible channels could include research and innovation investments; stakeholder consultations; collaborative sectoral policy development; innovation policy as a core principle of the relevant sectoral regulation.

7 SC1 – Health and demographic change and wellbeing; SC2 - Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy; SC6 Europe in a changing world – inclusive, innovative and reflective Societies) as well as in the Excellent Science section (Marie Skłodowska-Curie actions and the European Research Infrastructures, including e-Infrastructures already mentioned above.



Preventing diet-related chronic diseases and increasing the quality of life — delivering a healthier diet



List of Actions

Joint Actions and national alignment

A Priority topics indicated for Joint Actions

- a The MB will shape the second topic in RA 1 including taking into account possibilities of participation and/or alignment with the Horizon 2020 and/or adjoining initiatives.
- b The MB will shape the second and third topic in RA 2 including taking into account possibilities of participation and/or alignment with the Horizon 2020 and/or adjoining initiatives.
- c The MB will shape the second and third topic in RA 3 including taking into account possibilities of participation and/or alignment with the Horizon 2020 and/or adjoining initiatives.
- d Task Force will be established to prepare a proposal – with support from the SAB and the SAB – regarding the priorities for the third phase (2016-2017) including suggestions regarding alignment and synergy with Horizon 2020.
- e The research items indicated under ‘action point A.c. (above)’ will be divided into the following categories: networking (1), investing (2) and exploring (3) which will be part of the next Implementation Plan (2016-2017).

B National alignment

- a A funders meeting will be organized to monitor and assess the process of alignment of National Research Programmes with the JPI HDHL. The meeting will identify actionable outcomes that will support the process of alignment (end 2014).
- b A survey among the MS will be conducted to ascertain when funding decisions are taken nationally and how that impacts on the launching of Joint Actions (end 2014).

Collaborations adjoining initiatives, third countries and the European Commission

C The JPI HDHL will seek to work with its MS and in collaboration with the EC and adjoining initiatives, to achieve the ERA on the area of Nutrition & Health with a specific focus on developing ways to address the challenges described in the Expert Group Report

- a The 2nd conference of the JPI HDHL (28th of March 2014) is a first step in achieving this.

D Enhance the collaboration with adjoining (European) initiatives and Research Infrastructures

- a Adjoining initiatives were invited to the 13th JPI MB meeting in February 2014 and the 2nd international conference of JPI HDHL in March 2014 with the overall objective to facilitate networking and exploration of collaborative opportunities with clearly described objectives.
- b A short paper on the outcome of the MB meeting and the collaboration possibilities that have been discussed will be provided.
- c As an outcome of the international conference a full list of initiatives and a first draft of a strategy and associated action plan for collaboration with adjoining initiatives will be developed.

- d A Task force will be established to develop a strategy regarding the collaboration with adjoining initiatives and Third Countries using the paper (D.b) and the outcomes of the conference (D.c) as a base.

E *Harmonising framework conditions for scientific data collection*

- a Proposed actions/ instruments: workshops, conferences for harmonization purposes, new funding measures for European collaborative research projects driven by MS (joint call); in addition MS suggest a call within the scope of Horizon 2020 to the EC; collaboration with ECRIN recommended.

Implementation Tools, target groups and communication

F *Improve communication strategy and tools*

- a The CSA Work Package on communication is requested to refine and finalise the communication tools by April 2014 and to propose future communication strategies for the JPI based on their analysis.
- b The CSA will develop and implement communication tools, activities and products according to the revised strategy and tools.
- c The MB, in collaboration with the SAB and the SHAB, will apply innovative approaches to support a broad reach and to efficiently communicate and disseminate JPI activities and its achievements.

G *Enhance synergy between the MB and SHAB within JPI HDHL*

- a A list of issues will be established by the MB that require advice from the SHAB.
- b The SHAB will be requested to provide advice to the MB on the appropriate course of action to address these issues.

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