ClinicSearch

Clinical Trials and Clinical Research

Alberto Pérez Martínez

Open Access Review Article

Aesthetic Cultural Dynamics Training: A Proposed Extension Worker for Human Development Contextualized

Alberto Pérez Martínez

Tenured Professor Category. Center for Pedagogical Studies.

*Corresponding Author: Alberto Pérez Martínez, Tenured Professor Category. Center for Pedagogical Studies.

Received Date: June 05, 2025; Accepted Date: June 16, 2025; Published Date: July 10, 2025

Citation: Alberto P. Martínez, (2025), Aesthetic Cultural Dynamics Training: A Proposed Extension Worker for Human Development Contextualized, *Clinical Trials and Clinical Research*, 4(4); **DOI:**10.31579/2834-5126/098

Copyright: © 2025, Alberto Pérez Martínez. This is an open access article distributed under the creative commons' attribution license, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Abstract

The Cuban university, corresponding to the aspiration of our social project and Latin American and universal context, has designed a performance model which guarantees an comprehensive formation of new generations and strengthens the relations with the society. The University Extention as revitalizating axis of the universitary cultural process, must develop an amount of actions that from the integration of the fundamental processes, contribute to the cultural esthetic artistic developed as professional competence that developement the value of sensibility as capacity and potentiality to change the human being , that qualified it existence and being, implicit in human beings, that allow to understand and get the world in the socio-cultural historical context, acting honestly with everybody else, to live, develop and change the society with an ethical and esthetical behavior comittment, under the honor and respect, the beauty and the noble of the actitudes and the behavior of men, which implies a contextualization of essencial relations, which show up in the artistic cultural apreciation and the cultural esthetic.

Keywords: formative assessment cultural; aesthetic; science; education; university extension; integration; sociocultural context

Introduction

Higher Education in the Twenty-First Century: Vision and Action on Higher Education (UNESCO, 1998:1-18), are among the challenges for the current millennium: research: challenges and opportunities; promoting a culture of peace; Mobilizing the power of Its own document lays out ten foundations to achieve a universal vision of higher education, some of them are: the needs of education for all throughout life; a vocation not only to teach but also to educate; an ethical function of guidance in periods of crisis of values; the development of a culture of peace through all its activities; to work for the unity of men and women in solidarity difference and complementarity.la Conferencia Mundialla Educación Superiorla cultura. El The Cuban university, in correspondence with the aspiration of our Social Project and the Latin American and universal context, has designed a model of action that guarantees the integral formation of the new generations and strengthens the links of the university with society. The university is one of the most important actors in the sociocultural scenario. "University is, precisely that, the universal in culture"1. If man is, in inseparable dialectics, the result and protagonist agent of the creation of culture, then he can never be taken as an accessory or ornament of life, he is the creator of his own environment and at the same time promotes his own styles and ways of life. Regarding this approach, the intellectual Armando Hart Dávalos (1995) points out that culture cannot be divorced from the concrete spaces of the realization of individuals, groups, societies, or runs the risk of incurring in the dismantling of the human and cultural identity of communities. As a cultural policy of our Cuban social project and guidelines of university extension programs, in the face of the challenge of validating the ideas of turning Cuba into a country of cultured men, as an essential category of competence in the training of our professionals, committed to their sociocultural context, making José Martí's ideas of putting man at the height of his time a reality. "To educate," he said, "is to deposit in each man all the human work that has preceded him: it is to make each man a summary of the living world until the day in which he lives"2 In the practice of Cuban culture, the university system has not achieved full satisfaction in meeting the requirements for aesthetic-cultural training, because although it is a Cuban cultural policy, there has not been a will and capacity for its institutional dynamics that has promoted a systematic extensionist management that allows a professional aesthetic interpretation. in correspondence with contextual cultural development, where efficiency and effectiveness are achieved, which promote and disseminate the creation and apprehension of a professional aesthetic culture and with even greater emphasis at the present time, by the new conceptions of training based on the universalization of higher education. The process of extensionist cultural training in its cultural dynamics, as the object and field of study of this research, should promote the formation and development of the aesthetic culture of university students from the curricular and extracurricular aspects, which allows the dynamization of relations with Clinical Trials and Clinical Research Page 2 of 6

society, but it does not manage to systematize a work from the curricular dimension. extracurricular and socio-political that satisfies the cultural and aesthetic training needs at the Universidad de Oriente. The insufficient aesthetic vision in the university training model hinders cultural development, this has been detected from the diagnoses that are carried out every year aimed at knowing the particularities, interests, aspirations and

- Hart Dávalos, A. 1995. Today's university challenges. C. Havana. CREART Edition. Cuba.
- José Martí Pérez. Complete Works.- Center for Martí Studies: Critical Edition, 1985, t.2, p.251.

motivations of university students, in addition to the use of empirical methods such as individual and group interviews, daily observations, documentary analysis derived from the self-assessments of the different faculties due to the accreditation process of the universities, which has allowed inferring the following scientific problem: Insufficient recognition of the integrative cultural relations between the educational context and sociocultural contextual diversity, which limit the relevance of the university educational process. This has its scientific expression in the initial epistemic contradiction between contextualized cultural appropriation and its sociocultural formative integration. Thus, it is defined as the object of this research: Process of cultural formation in university extension. The field of action moves, consequently, in the extensionist formative cultural dynamics and the objective is, therefore, the elaboration of a formative aesthetic cultural strategy in university extension, based on a model of the extensionist aesthetic cultural dynamics, which contributes to improve the insufficiencies presented by professionals in their performance.

Determining the causal assessment of this situation in:

Limited theoretical arguments in the cultural relations of the university extension process. Insufficiencies in the integrative conception of university extension, as a dynamic axis of the process of university cultural formation. Insufficiencies in the systematization of cultural training policies in their relationship with the demands of sociocultural contexts.

Development

The university, faced with the challenges of contemporaneity, must develop its men and women as citizens committed to their cultural identity, authentic in their discourses and works; flexible in incorporating universal culture into their environment, as a necessity of development; and transcendent in their historical-social-cultural context, is why the conception of the world cannot continue to develop through sets of scientific knowledge structured in the privatized light of each scientific discipline, when the development of humanity requires cultural values conceptualized in interdisciplinary and transdisciplinary fields. The achievement of the aims, which in relation to culture, has the political will of the country's leadership, calls for the overcoming of difficulties engendered in previous stages to bring culture to all members of society within the conception of the integral general culture, in the face of the supercultures that dominate the universal panorama of our world. given the monopoly of science and technology applied based on the overestimation of cultural patterns related to a way of life that is oriented towards alienable forms of development, stigmatizing the survival of the strength of the values of the native cultures dominated since time immemorial by colonizing cultures. In this sense, university extension must be assumed as an integrative formative cultural process that entails the commitment of the university community in the social and intentional appropriation of culture, through the social relations of a formative nature that are developed between subjects, which leads to the sustainable transformation of reality. (Fuentes, 2009). Through this commitment, university institutions have recognized their social integration, but their integrative vision in academics, research and work is still insufficient, a dynamic that must be achieved through university extension. Other contributions from psychological, pedagogical, and sociological studies (Vigotsky 1925, Wertsh 1993, Freire 1972, Oñoro 2003, Suárez and del Toro 2002, cited in Claret 2009, H Fuentes, E Matos and J. Montoya 2006) have enriched the research carried out regarding university extension, from a didactic perspective, insufficiently revealing of the system of significant contextual relationships that characterize it. The common denominator in these approaches lies in the recognition of university extension "as a process of cultural promotion within the university and towards society that is projected to the development of the professional as a factor of change to disseminate the culture preserved and developed in the university" (González G and González M., 2001). However, even though this author recognizes the need to enhance this process from its formative dimension, there are still limitations, since it has not been possible to reveal a system of relations expressive of the cultural essentialities of the interactive processes of university education. It is necessary, then, to define cultural training in university extension as the integrating process of formative influences, for the development of instructive, educational and developmental potentialities, both individual and social, based on the most essential human qualities. This is concretized through the treatment of the most significant cultural contents of the training context. This is consistent with the recognition of culture as the context containing a complex system of significant objective-subjective, internal-external, implicit-explicit, material-spiritual relationships that, in particular, condition a certain form of human development, in the formative, instructive and educational processes. (Matos, E. Cruz, L. 2011) Arce, (2005); García-Canclini, (n.d.); Palencia, (1990); Rodríguez, R., (2000); Sánchez, F., (2001), Boas, (1964); Harris, (1998); Lévi-Strauss, (1977); Malinowski, (1981); Scheller, (1977); Tylor, (1999) Clifford Geertz. From this perspective of conceptualization of culture as a context, it is possible to resignify cultural contents based on the appreciation of the cultural fact, with a professional commitment, which through the knowledge, skills and values treated in the didactic process, during the extensionist cultural training, must be contextualized to be assumed as a guiding activity of cultural training. But, if an integrative stance is assumed of the extensionist dynamic to the training process, then the cultural fact becomes an instrument for the enhancement of cultural training, but not the center of it, nor its only objective. The concept to be systematized must go further, towards the interpretation of all the results achieved by man in his historical evolution, as part of that culture to be preserved, transformed and disseminated. Thus, the processes, results and current challenges of academic training are enriched from these same processes, results and challenges in the research and scientific-technical fields, as enriching forms of professional life, which becomes, then, cultural facts. Thus, from the perspective of this research, the process of cultural formation in university extension is contained in a cultural dynamic, as its sub-process, which is activated through the didactic systematization of these cultural facts. Cultural dynamics, on the other hand, are considered as the interactivity of the formative process that enhances the relevance of the processes of understanding, appropriation, systematization and generalization of cultural content, both in daily activity and in its essential relationships, given in academic, research and work, to guarantee the significant appropriation of the results of human historical development. as well as its improvement. Cultural dynamics are made possible through the application of methods that, through cultural promotion, develop actions that encourage interaction between the socializing subjects of culture. In the relationship between society and university culture, it is necessary to raise the development of the cultural interpretation of the formative context of the subjects, through the intrinsic historical-cultural and expressive values, Clinical Trials and Clinical Research Page 3 of 6

fundamental for the achievement of a process of participation and social cohesion committed from extension. From these criteria, cultural promotion is integrated into the institutional system manifested in the subsystems or links that structure it and that find an integrating, dynamic and totalizing space in the extensionist cultural process, as a university training axis. The extensionist formative cultural dynamic, therefore, becomes a formative process of social and individual construction, by promoting the satisfaction of cultural need in a dialectical unity of the instructive and the educational. This integrity contributes to the transformation and assumption of new values, meanings through cultural promotion and concretized in a set of actions of the formative cultural system. The condition of methodology of cultural promotion allows it to be used to undertake the development of educational-formative projects aimed at the development and transformation of training situations, as a process that has not yet been sufficiently strengthened. Therefore, in terms of training, extension must contribute to improving the cognitive, emotional and technical-instrumental skills that allow the student to participate in this process as a space for cultural promotion, through its influence on the modes of professional action, through which it is possible to promote a training that is resignified, develop and enrich in the sociocultural formative context. Therefore, and taking into account the communicative quality of university extension, through its processes of cultural promotion and the way in which aesthetics becomes particularity in the integrative didactic treatment of cultural facts, it is possible to assume aesthetics as the "communicative relationship that results from the subject's ability to dialogue with his environment -within the social relations that he establishes, understood as all kinds of productive and vital activity – then the aesthetic is realized in each of these as an integrating and qualifying dimension of them" (Medero Hernández, 2005 p- 107). The significance of these relationships refers to deepening the aesthetic cultural formation as an expression of the system of knowledge, skills, feelings, values, convictions, which are based on a dialectical-materialist methodology and a cultural-historical approach, aimed at the integrality of knowledge, through the cultivation of sensitivity and spirituality. Consequently, it is recognized that cultural sensitivity goes beyond the simple sensory-perception caused by physical stimuli, and extends to the meaning that the qualities they find in the world around them take for the subjects, because they are concretized in the form of affective-cognitive experiences and model their behavior in relation to the cultural content. from ethical-aesthetic foundations. The great changes brought about by scientific and technological development have changed social needs and human nature itself. Intellectual education would be empty if feelings were not educated, in a general sense this dimension guides axiological training from the broadening, deepening and search for committed sensitivity, with the most universal aspects of the human being, about the most significant, relevant and essentially novel ethical and aesthetic values for the university community. It is materialized in a greater development of cognitive, evaluative and interactive activity. It is therefore that its relationship with scientific development, the current world needs a science enriched and committed by the inner spiritual richness of man, which allows him a balanced personal and social development, the improvement of his basic capacities, his self-esteem, self-determination, ethical and aesthetic sensitivity, feeling of responsibility and competence to be in better conditions to accept the normal challenges of contemporary life. Science constitutes an important form of social activity and, therefore, includes the entire subjective burden of human activity. The system of relations revealed in the model of dynamics that is provided constitutes a reinterpretation of the essential categories that emerged from the epistemological and praxiological systematization carried out that is synthesized in the contradiction revealed at a hypothetical level, given between the aesthetic appreciation and its didactic contextualization, mediated by the integrative interpretative process of cultural awareness in university extension. Aesthetic appreciation implies the moment of this cultural dynamic that expresses a first stage of appreciation, from the harmony and aesthetic enjoyment, of the cultural forms and contents expressed in the tangible and intangible results of human achievements. Therefore, this first moment alone does not guarantee the qualitative transformation of the object of this research, if it is not based on its relationship with contextualization, as a didactic process that favors the internalization and motivation of the student and, therefore, the development of his imagination, feelings and emotions that contribute to the qualitative improvement of appreciation. Therefore, this dialectical relationship is mediated by the integrative interpretative process of cultural awareness in university extension, as a stage of development and spiritual growth that energizes contextualized professional training, as it conditions the affective way of apprehending those qualities that particularize a cultural fact in a significant way, so that these processes, in their integration, they favour the recognition of the integrating cultural relations between the training context and the socio-cultural contextual diversity. The model that is proposed, then, becomes a new interpretative level of this contradiction based on the relations that sustain its movement and that have their expression in the dimensions of formative cultural identification and aesthetic-contextual professional creation.

Formative cultural identification dimension

This dimension proposes the integrative configuration: professional contextual aesthetic interpretation, as the synthesizing stage of the cultural dynamics that allows the professional in training to carry out observation, understanding and explanation sensitive to the essentialities and manifestations of their daily training-professional, based on the contextual relationships that characterize it.

The interpretation of the cultural fact becomes a broader and more totalizing concept, which in this case delves into the aesthetic contents, such as those achievements, material and intellectual productions and cultural aspirations, which are essential and pertinent for the spiritual growth of the subjects immersed in a certain formative process, so their appropriation must be facilitated through academic training. research and work, in coherence with their interests, experiences and future socio-cultural and specific professional functions. Therefore, this professional aesthetic-contextual interpretation, as a synthesis configuration, is energized in the relationship that is established between the decoding perception of the cultural form and the evaluative awareness of the cultural content. The decoding perception of the cultural form is the process that involves deciphering and understanding the meaning that has been given to the sensations through which the cultural fact is presented, externally, through its dissimilar and complex presences. Students, from this extensionist cultural dynamic, then, must be trained, not only in discerning these meanings, as they have been bequeathed to them, but also in how to penetrate and recreate them in new senses from their own contexts of professional training. Consequently, it is possible to propose that, in the aesthetic-formative extensionist cultural dynamic, the evaluative sensitization of the cultural content emerges as a dialectical pair of the decoding perception of the cultural form, as a configuration that expresses the exchange of impressions that, through identification with certain postures, models, perspectives, generates susceptibility to the influences of the cultural context -which can often be be spontaneous, unconscious and intuitive - and that, in a decisive way, shape tastes, preferences and professional intentions, in coherence with material and spiritual aspirations. Therefore, future professionals must be creators and as such, the artist's sensitivity must be present in them. Therefore, this configuration constitutes a cyclical and progressive process, which allows us to deepen the logical Clinical Trials and Clinical Research Page 4 of 6

achievement of the characterization and comparison of the intrinsic qualities of cultural facts. These processes, therefore, are integrated into a new configuration that energizes them: cultural formative appreciation. Cultural formative appreciation is understood as the process of responsible approach, through the judgment and enjoyment of the cultural fact, which implies a qualitative transformation of the student through his contextual training process, which allows him to recognize and estimate the value that a certain cultural object, process or phenomenon implies for said professional training process. In this way, from the relationships that are established between the configuration of professional aesthetic-contextual interpretation, energized by the relationship between the decoding perception of the cultural form and the evaluative awareness of the cultural content, synthesized, in turn, in the cultural formative appreciation, a first movement expressed in the dimension of formative cultural identification emerges. The dimension of formative cultural identification is assumed as the stage in which aesthetic and cultural contents are harmoniously integrated, as they are signified as formative phenomena, through which the professional in training conceives, with satisfaction, an integrating image of his or her training process, through the development of his or her aesthetic valuation skills, through which he or she develops his or her creative capacities. However, this first movement is not enough to guarantee the development of the dynamic that is proposed, since it requires a second moment of penetration into its cultural essentialities, which is aimed at achieving a concretization and which, therefore, once again conditions the formative cultural identification exposed, in a dialectic of constant improvement, through the constructive processes that are generated.

Dimension of professional creation contextual aesthetics

This dimension is based on presenting the configuration of the valuation of the universal aesthetic balance, assumed as the process in which it is possible to critically consider the integrating harmony of spirituality as a human essence, based on its cosmovisual quality. In this process, perspectives, behaviors, norms towards the cultural facts with which one interacts from open positions are modified, justifying feelings of liking or disliking them, where the cultural values of humanity are integrated, in equity, to the formative process, without privileging criteria, or own positions, over the different ones, but a dynamic and enriching growth is achieved. significantly, of the aesthetic richness they have inherited from humanity. These dialectically related categories, as forces that are presupposed and conditioned, in this case, moreover, from the relationship of the universal with the own, make the ethical systematization of identity emerge as a dialectical pair of the valuation of the universal aesthetic balance, as a process that conditions and presupposes it. This is explained by assuming this configuration of ethical identity systematization as the hierarchical and sequenced process of integration and generalization of moral considerations towards the surrounding reality, other people and oneself, as a result of the understanding and objective-subjective appreciation of the natural and social reality in which the professional is trained. This configuration of ethical identity systematization favors the development of attitudes or behaviors that imply the good for the majority, determining what is correct and what is not in relation to the results to be achieved. Such attitudes will only be correct and, therefore, ethically accepted insofar as they promote the good for all, without differences, reservations, concessions, privileges, partialities, or omissions. In the aesthetic-formative extension cultural dynamic, the configuration of contextualized socio-humanist construction is assumed as a theoretical-practical process, which allows the transcendent appropriation of the aesthetic content historically developed by humanity, through the strengthening of skills to build new knowledge using, recreating or creating methods, techniques, procedures, or other resources that allow them to develop socio-professional spirituality, through concrete results consistent with certain significant relationships that condition them. The contextualized socio-humanist construction, therefore, emerges as a response to the social demands of the context, so it must not only have a practical objective, but also favor spiritual enjoyment contextualized to the spaces of professional action. Sensations are thus stimulated that, despite not being able to be fully communicable, contribute to the spiritual enrichment in academic, research and work coexistence, which achieves the construction of "new" cultural facts as a result of the exercise of the profession and the professional culture accumulated in the historical evolution of a given branch of knowledge. promoting aesthetic delight in knowledge, recognized as the highest and most sublime human aesthetic expression. Thus, the dimension of contextual aesthetic professional creation emerges.

Results

The results of the partial application of the proposed strategy in the Computer Engineering career 2nd year, Faculty of Electrical Engineering at the Universidad de Oriente, which allowed to verify its effectiveness in perfecting the aesthetic-formative cultural dynamics of extension, from revealing a satisfactory trend of improvement, which corroborates the relevance and feasibility of the proposal, as a viable alternative to enhance the appropriation and aesthetic valuation of the cultural fact from the professional formative significance for an aesthetic-contextual professional creation. Achievement of an adequate significant appropriation of aesthetic cultural contents, which was expressed in the construction of innovative proposals for socio-humanist creation containing a coherent sensitization and contextualized ethical-aesthetic valuation, with an increase in the flexibility of students, teachers and other subjects involved, towards the acceptance of the necessary transformations in the aesthetic-cultural dynamics of the training process cultural extensionist, which increased actions that link the extension process with teaching and research from its aesthetic specificity and professional training activity. Development of the processes of interpretation and reconstruction of cultural contents and the project-based method as a way for the creation of the new cultural fact by offering novel solutions to the problems of the formative context in correspondence with the specificity of their modes of action, based on a joint process of new ways, resources, methods and strategies to develop their socio-professional spirituality, with committed and flexible responses in correspondence with the demands of the professional context. Encouraging results are shown in their behaviors, attitudes in relation to the new postures and worldviews assumed in their aesthetic assessment process, which is expressed in a greater motivation and ethical-identity commitment to their formative context.

Conclusions

The epistemological and praxiological characterization of the object and field of action of this research, as well as the analysis of its historical antecedents, evidenced the limited theoretical-methodological responses that fail to explain the interactive processes and contextual relationships of university education, based on the integration of university extension as the articulating axis of cultural dynamics. The proposed model of the aestheticformative cultural dynamics of extensionism reveals the character of aesthetic-contextual formative integration for socio-humanist professional creation, as the essence and sustenance of the aesthetic-formative extensionist cultural dynamic. This new system of relationships contributes to raising the cultural relevance of the university educational process, based on the relationship between aesthetic appreciation and its didactic contextualization, mediated by the integrative cultural interpretative process of university extension. The aesthetic-formative cultural strategy of university extension, as an expression of its essential regularity, which favors its pertinent didactic-methodological treatment and guarantees an adequate Clinical Trials and Clinical Research Page 5 of 6

integration between university training processes, through university extension as an articulating axis for contextualized socio-humanist professional construction, and allows defining the actions that are developed in each stage, to obtain progressive levels of achievement by the subjects involved in their training process.

References

- 1. Hart Dávalos, A. Today's university challenges. Pages 2 -16.
- 2. Martí Pérez, José. Complete Works. T.2, p.251.Bibliography
- 3. Aguilera García, Luis Orlando. (2000). The University-Society Articulation. Thesis to Deal with changes in universities. *Cuban Journal of Higher Education*. La Habanapp.25 -35.
- 4. Álvarez, Álvarez Luis. (2003). Circumambular el Arte. Santiago de Cuba: Ed. *Oriente*, pp. 35 -46.
- (2004). Programa de Desarrollo de la Extensión Universitaria en Habana: Ed. Ministerio de Educación Superior, la Educación Superior. La
- Collective of Authors. Aesthetics. Current Approaches. Havana: Ed. Félix Varela, 2005. pp. 25 -32.
- 7. Fuentes, H. (1994). Holistic configurational model of higher education didactics. Santiago de Cuba: Universidad de Oriente: CeeS "*Manuel F. Gran*", pp. 14 -28.

- Fuentes, H. (1998). Dynamics of the teaching-learning process.
 Santiago de Cuba: Universidad de Oriente: CeeS "Manuel F. Gran", pp. 20 -35.
- García Canclini, Néstor. (2003). Anthropology and Cultural Studies: An End-of-Century Agenda. Cultural Studies in Mexico. Mexico, DF.: Fondo de Cultura Económica,. pp. 10 -25
- González Gil, Ramón. (1996). A model of University Extension for Cuban Higher Education.; University of Pinar del Río, La Habanapp. 20-45. (PhD Thesis, in Pedagogical Sciences).
- 11. Geertz, C. (2004). Dense description: Towards an interpretative theory of culture. Havana: *Editorial Félix Varela*, pp. 4 -6.
- Pérez Martínez, Alberto. (2009). Cultural Management for Community Artistic Development. Santiago de Cuba; Universidad de Oriente, pp. 20 -41. (Master's thesis, Sciences for Community Cultural Development)
- 13. Vygotsky, L. S. (1987). Thought and Language. Havana: Editorial Pueblo y Educación, pp. 24 -38.
- 14. Vygotsky, L. S. (1987). Psychology of Art. Havana: *Editorial Pueblo y Educación*,

Clinical Trials and Clinical Research Page 6 of 6

Ready to submit your research? Choose ClinicSearch and benefit from:

- > fast, convenient online submission
- > rigorous peer review by experienced research in your field
- > rapid publication on acceptance
- > authors retain copyrights
- unique DOI for all articles
- > immediate, unrestricted online access

At ClinicSearch, research is always in progress.

Learn more http://clinicsearchonline.org/journals/clinical-trials-and-clinical-research



© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by/4.0/. The Creative Commons Public Domain Dedication waiver (http://creativecommons.org/publicdomain/zero/1.0/) applies to the data made available in this article, unless otherwise stated in a credit line to the data.