



Representation of the LGBTIQ+ Community in Three Peruvian Television Series

Alejandra del Carmen Elias Zambrano , Paola Palomino-Flores ,
and Eliana Gallardo-Echenique  

Universidad Peruana de Ciencias Aplicadas, Lima 15023, Perú
eliana.gallardo@upc.edu.pe

Abstract. Television in Peru is the media with the greatest reach potential, because more than 80% of the population airs television at least once a week. Television has omitted certain social groups in its transmissions such as LGBTIQ+ community. They have historically been a marginalised sector suffering widespread violence and discrimination. This study analyses the representation of LGBTIQ+ characters in three Peruvian TV series. We used a qualitative methodology with a hermeneutic approach. The results show that, although LGBTIQ+ characters are present in these series, their representation is limited to stereotypes that encourage mockery. Moreover, the topics addressed by these characters focus on the problems they face due to their sexual orientation or gender identity. We concluded that, although there are more conversations regarding the acceptance and rejection of homophobia in Peru, the representation of the LGBTIQ+ community is limited only to ‘G’ or gay, resulting in a lack of diversity and inclusion of other sexual orientations and gender identities.

Keywords: Representation · Peruvian Television Series · LGBTIQ+ Community · Stereotypes · Heteronormativity

1 Introduction

Television in Peru is the media with the greatest reach potential [1], because more than 80% of the population airs television at least once a week. Every day, audio-visual content is accessed by millions of users who receive messages on which they build their belief models. Thus, televised media is one of the most powerful systems for the circulation of meanings today [2]. Television has omitted certain social groups in its transmissions [3]. In this context, the reality for the LGBTIQ+ community is discouraging, as they have historically been a marginalised sector suffering widespread violence and discrimination [4]. They also face ‘a series of problems in the exercise of their rights because of the prejudices, stereotypes and stigma that exist in relation to their sexual orientation, gender expression and gender identity’ [5].

In Peru alone, according to ‘Criminological characteristics of the intentional deaths of LGTB people in Peru’, in 2012–2021, 84 criminal complaints were analysed; almost 70% presented evidence of violence due to prejudice. Of these cases, several remain

unpunished to date [6]. These types of violence are also showcased in television, where television series not only play a role of entertainment but also present representations of communities that reinforce socially accepted stereotypes. Fictional television series present models that allow people to identify with the characters; thus, they can be imitated and even create stereotyped representations in their audience [7]. Continuous exposure to media determines that certain representations are more entrenched in the memory and, therefore, more stereotypes are reproduced [8].

In Peru, more than 1.7 million adult Peruvians identify as a non-heterosexual sexual orientation [9]. Despite this data, the Peruvian state does not have an information collection system to study the situation of LGBTI people in the country [10]. Representations in past Peruvian TV series such as that of Claudio Matarazzo in 'Al fondo hay sitio' [There is Room at the Back], Alonso Schulman in 'Yo no me llamo Natacha' [My Name is not Natacha] and the censorship of scenes with gay characters in 'La Perricholi' focused on the vulnerability of the community in the country. In Peru, the rights of LGBTI+ people are not fully recognised by the state or by society; the major violations of their rights range from 'homicides, suicides, physical violence and harassment to discrimination' [10]. Thus, the way in which television develops and offers new discursive positions on the subject impacts the community's social life, their cultural and interpersonal dimensions, as well as their existence [11].

Throughout this study, the acronym (LGBTIQ+) may vary according to the authors mentioned to support the argument, because this depends on the year the study was conducted or the population chosen for them. This results in the use of LGB, LGBT, LGBTI, or LGBTIQ+. Moreover, this study avoids the use of the word 'homosexual' because of its negative and offensive historical connotation towards members of the community. However, during the literature review, the authors have implemented it for research purposes. The research question guiding this study is as follows: What is the representation of LGBTIQ+ characters in the nationally produced series: 'Los Vílchez 2', 'De Vuelta al Barrio' and 'Junta de Vecinos'?

1.1 Stereotypical Representation of LGBTIQ+ Characters

Gender stereotypes are pre-conceived characteristics of what an individual is or should be like in a given society [12, 13], and can vary according to context and culture [14].

Stereotypes highlight the accepted and applied cultural construction of what comes to be considered as 'masculine' and 'feminine'. These beliefs are harmful, because they promote that women and men are limited in the actions they can perform in society [15]. The stereotypes attributed to men tend to be sporty, aggressive, intelligent and sexually active [14], while women are depicted as being warm, sensitive and family-oriented people [16]. Television and fiction series develop gender identity in this eminently audio-visual society [17]. Multiple authors state that there are more negative stereotypes of disadvantaged groups than socially better-positioned groups, such as the LGBTIQ+ community [18, 19] because, throughout history, this community has suffered oppression and hatred. It has been linked to events such as the Stonewall Riots and the AIDS epidemic [20]. Being part of the community is not something to be shown, but can come to be affirmed through signs such as speech, gestures, expressions or clothing. While this is not always present, this representation has been created by the social, political, practical

and textual acceptance of society [21]. This study focuses on the stereotypes of the gay and transgender person, as they are the only ones addressed, in some way, on Peruvian television. Gazzola and Morrison [22] conducted three focus groups to measure the perception of transgender women and argued that transgender people were perceived as citizens who stressed their femininity with dresses, makeup and wigs. Further, they stated that they have a physically ‘male-like’ appearance [17, p. 81]. Thus, transgender people continue to be discriminated against in relation to employment, health care and education, as well as to obtain certificates or legal documents.

1.2 Homophobia and Transphobia

The word homophobia combines the Greek words phobia (fear) and the prefix homo (same), and is defined as a fear or rejection of sexual differences [23]. Discrimination against any group implies unequal and unfair treatment based on a prejudice that generates exclusion. Therefore, LGBTIQ+ people are targets of homophobia, because the culture is still sexist, patriarchal and cisheteronormative, driving hatred towards the community [24]. Heteronormativity establishes that everything linked to heterosexuality is acceptable and anything diverging from it is not. The media add to this reality as they reproduce and broadcast heterosexual discourses or continue to marginalise LGBTQ groups [19] through jokes, mischaracterisations and nicknames [16].

1.3 Consequences of the Lack of Representation

Members of the LGBTIQ+ community grow up in a heterosexual society with few community referents; therefore, such representation is acquired through other media such as television, which substitutes interpersonal contacts with LGBT people for those who lack these relationships [25, 26]. Forms of representation have a direct impact on individuals because they delimit their attitudes, behaviours and more [21]. Thus, repeated exposure can generate a collective memory by members of the community through their own understanding.

However, there is scarce and not very encouraging representation of the LGBTIQ+ community in audio–visual media. Waggoner [27] states that these characters are pigeonholed in stories with little representation besides death, evil or suppression. Bond *et al.* [25] show that they are represented in heteronormative situations or in highly stereotypical contexts. These representations generate a ‘misrepresentation to understand themselves and others’ [27, p. 1879]. The limited and stereotypical representations highlight the discrimination and mockery suffered by LGBTIQ+ community members. Furthermore, Rowden [28] states that ‘groups that excluded from the media are likely to suffer social inequality, which is influenced by media representation’ (p. 37), because television can reinforce stereotypes or have a positive impact on reducing them [3].

1.4 Methodology

The research paradigm is hermeneutic interpretive focused on the meaning structures interpreted and inferred from the context [29, 30]. It has a descriptive and analytical

level of a theoretical model [29]. It is an observational and interpretive study on the representation of the LGBTIQ+ community in three nationally produced TV series. To this end, cases will be observed using qualitative content analysis and the log file method [31]. Relevant elements for qualitative analysis are captured using log units focusing on the frequency in which an element is repeated and its presence [32]. We analysed three nationally produced fiction series that included at least one character from the LGBTIQ+ community. We chose three series aired in prime time on channel América Televisión: ‘De Vuelta al Barrio’ [Back in the Neighbourhood] [33], ‘Los Vílchez 2’ [The Vílchez 2] [34] and ‘Junta de Vecinos’ [Neighbours Gathering] [35].

‘De Vuelta al Barrio’ [33] aired Monday through Friday from 8:30 pm, telling the story of two characters, Pichón and Malena, who return to their childhood neighbourhood with their four children. There, they experience new obstacles, love stories and enmities. ‘Los Vílchez 2’ aired from Monday to Friday at 8:30 pm and narrates the life of María Elena and her daughter, Viviana, after their release from prison [34]. In this context, the Vílchez family is forced to start a new life in a unique new neighbourhood. Finally, ‘Junta de Vecinos’ aired from Monday to Friday from 9:30 pm, and tells the life of many characters who live in a building and the conflicts, friendships and love stories between them [35]. An apparent transgender woman is added. This last case is important because of the lack of transgender representation in the country and the stigmatisation revolving around this part of the community, which aggravates their vulnerable situation.

This log file is a modification of the observational form by Espinoza and Saavedra [36] called ‘Presentation of homosexual characters in national television series’: ‘Al fondo hay sitio’, ‘Así es la vida’ and ‘Yo no me llamo Natacha’ (Table 1).

2 Results

This study analysed the representation of LGBTIQ+ characters in three nationally produced TV series—‘De Vuelta al Barrio’, ‘Junta de Vecinos’ and ‘Los Vílchez 2’. To this end, we watched four episodes per gay character (Edmundo, Ignacio, Jota and Gustavo) and one episode per the alleged case of a transgender character (Nicky Nicole), as she only had a brief appearance in ‘De Vuelta al Barrio’. We analysed their physical representation, psychological representation, thoughts, personality and social environment. After due processing, we obtained the following results:

Of the five characters analysed, all were represented in the channel América Televisión (Channel 4) in the last five years and during prime time (19:00–22:00). Of the four characters playing the role of a gay person, one of them presented exaggerated and dramatic facial kinesics. In the case of Nicky Nicole, the facial kinesics was portrayed in the same manner. These two characters were portrayed with a caricatured profile, as a form of mockery. In terms of body kinesics, Edmundo and Nicky Nicole in ‘De Vuelta al Barrio’ perform exaggerated movements.

In relation to clothing, Edmundo is characterised by being elegant, outlandish and neat. He usually wears designs such as animal print and scarves and toupees that complement his clothing. The other characters who play the role of a gay person usually dress in a casual or sporty manner, except for Gustavo, who wears formal clothes at almost all times. Finally, Nicky Nicole, in her brief appearance, is seen wearing tight and low-cut neon pink clothes.

Table 1. Log Table.

Television Broadcasting	Broadcasting Channel		
Television Series	Series Name		
	Season/Chapter		
	Character Name		
Character Dimensions Analysis	Physical Representation	Facial Kinesics	Head Movement
			Mouth Movement
			Eyebrow Movement
			Eye Contact
		Body Kinesics	Standing Posture
			Sitting Posture
			Gait
			Arm Movement
			Hand Movement
		Dress Kinesics	Fashion Trends
			Type of Clothing
			Clothing Colour
	Accessories		
	Proxemics	Spatial Distance	
		Psychological Representation	Personality
Thought			
Temperament			
Repression with their Environment	Lifestyle		
Textual Representation	Phrases		

In terms of personality, the study yielded varied results. Gustavo, Ignacio and Jota tend to be independent, touchy and friendly. Jota and Ignacio are more introverted in their personal lives, but do well in social aspects. Edmundo and Nicky Nicole are very exaggerated, talkative and sarcastic. Unlike the other characters, Edmundo develops an egocentric and spiteful role. The main thoughts of the characters studied and the related themes include the ravages of being a member of the LGBTIQ+ community, such as accepting and revealing their homosexuality, and the acceptance and rejection by others. Furthermore, all the characters are in search of love and face several obstacles such as distance or fear. As regards the gay characters, the importance of physical appearance was clear. Remarkably, only Jota shows previous and internalised knowledge of the topics that address sexuality and speech openly. He is one of the characters who defends and gives his opinion before any act of homophobia, unlike Gustavo or Ignacio.

In terms of lifestyle, all the characters except for Nicky Nicole (because she only appears briefly in the series and her background is unknown) appear to be middle to upper class. They are professional and devoted in their respective professions. A positive result is that all the series analysed show acceptance towards the LGBTIQ+ community. In 'Los Vílchez 2' and 'Junta de Vecinos', there are several episodes where homophobia is rejected and they show the harsh situation of the LGBTIQ+ community. However, in 'De Vuelta al Barrio', comments were made in a mocking tone towards Edmundo or towards gay people in general, besides the transphobic scene with Nicky Nicole. Nevertheless, as the series continued and these actions were condemned by viewers, the homophobic attitudes were also rejected and punished.

3 Discussion

Preliminary results show an increase in the representation of the LGBTIQ+ community in television, however, of the five representations analysed, two continue to be stereotyped, just like past representation in Peruvian television, and are used for comedy [20, 37]. As television is a socialising agent that influences the attitudes, beliefs and behaviours of audiences [25], the lack of representation or negative and exclusive messages towards sexual orientation, gender expression and gender identity [20, 37] affect the LGBTIQ+ community. This analysis confirmed that lesbian women are invisibilised, and the same happens with bisexual, transgender and queer people. In this context, good representation can create spaces for dialogue that reject socially accepted stereotypes [20].

Television is one of the most influential media in the development of behavioural patterns in the audience [38], because it can influence emotions and perceptions [14]. It can create and reinforce realities [38]. Therefore, it can impose its schemes and give invisible messages controlled by those in power [39]. Therefore, television series have become a format that may reproduce certain negative stereotypes [3] and identification with media models [7]. Thus, content-generating media should create representations where a more comprehensive view of the lifestyle of members of the LGBTIQ+ community is offered in a responsible and informed manner. They are powerful ways to fight negative stigmas and stereotypes of the LGBTIQ+ community, and provide greater positive representation of the community [18].

With regards to the research question, the representations of LGBTIQ+ characters on Peruvian television continue to be stereotyped, limited and scarce in proportion to the heterosexual cast. Dyer [21] states that being part of the LGBTIQ+ community is not something that is shown on television, but is defined through signs that are seen through gestures, expressions and clothing. This is the case of Edmundo or Nicky Nicole in 'De Vuelta al Barrio', who have exaggerated body movements and verbal language. Moreover, they continue to reproduce the stereotype of the effeminate gay man with eccentric taste, in the case of Edmundo, and of a transphobic character, with Nicky Nicole.

The heritage of the comic representation on the gay theme reinforces the conservative thoughts of Peruvian society [36]. Along the same lines, Van Meer and Pollmann [8] revealed that feminine characteristics were found in most gay characters while masculine characteristics were observed in lesbian characters. The aforementioned study highlights

sexuality as the central axis of the queer character. Thomson [40] states that gender identity and sexuality should be another aspect of life rather than the core of the story. In addition, according to Monaghan [19], the problems and characteristics of LGBTQ characters are equivalent to any human being. While Hart [41] mentions that these interpretations are considered neither good nor bad, they do not cover the wide range of the lives experienced by people in the community. Therefore, more references are required to redefine the denigrating treatment given to the LGBTIQ+ community from the onset.

4 Conclusions

The results obtained show that the use of stereotypes in representations of queer characters continues to be linked to mockery, in addition to being limited and focused on sexuality as the main axis of their stories.

Furthermore, representations of the acronym LGBTIQ+ in Peru are limited to just 'G' for gay. Lesbian, transgender, intersex, bisexual and queer people do not have any representation. No sexual situation is observed that does not go beyond subjectivity or a small gesture of affection such as handholding. One of the first appearances of a gay kiss in a national television series has taken place in 'Junta de Vecinos'. The gay representation, characterised by a person with exaggerated body expressions, feminine clothing and high-pitched voice, is not negative. However, by being repetitive over time in television series, it makes this image as the representation, limiting the ways of acting, expressing or being with other people in the LGBTIQ+ community.

Television plays a significant role as a content creator, because it is used as a means of visibility for a group that has historically been marginalised. Moreover, it generates a safer cultural change for LGBTIQ+ community members. Representations of the collective through audio-visual resources should continue, but in a respectful, fair, varied and conscious manner. The theory is broad and there are reflective studies specifically addressing this matter. However, this research was limited by the lack of references in Peruvian theory. Therefore, studies exploring these topics are recommended to learn more about the situation of the community in Peru.

References

1. CPI Research: CPI - Compañía Peruana de Estudios de Mercado y Opinión Pública SAC: Medios de comunicación, <http://cpi.pe/index.html>.
2. Gutierrez, C.: La representación de la identidad en la televisión pública, un estudio de la miniserie 'Déjala morir.' Encuentros. 20, 81–93 (2022). <https://doi.org/10.15665/ENCUEN.V20I01.2114>.
3. Ramos, M.M., Gonzalez-De-Garay, B., Calderon, C.A.: Grupos minoritarios en la ficción televisiva española: análisis de contenido y percepciones ciudadanas para la creación de un índice de diversidad. Cuadernos.info. 46, 307–341 (2020). <https://doi.org/10.7764/CDI.46.1739>.
4. Corte Interamericana de Derechos Humanos: Corte Interamericana de Derechos Humanos Caso Azul Rojas Marín y otra Vs. Perú Sentencia de 12 de Marzo de 2020 (Excepciones Preliminares, Fondo, Reparaciones y Costas), https://www.corteidh.or.cr/docs/casos/articulos/seriec_402_esp.pdf (2020).

5. Pueblo, D. del: Derechos humanos de las personas LGBTI: Necesidad de una política pública para la igualdad en el Perú. (2016).
6. Nación, M.P.F. de la: Características criminológicas de las muertes dolosas de personas LGTB en el Perú 2012–2021. (2022).
7. Galán, H.: Construcción de género y ficción televisiva en España. *Comunicar*. 15, 229–236 (2007).
8. Van Meer, M.M., Pollmann, M.M.H.: Media Representations of Lesbians, Gay Men, and Bisexuals on Dutch Television and People’s Stereotypes and Attitudes About LGBs. *Sex. Cult.* 26, 1–25 (2021). <https://doi.org/10.1007/S12119-021-09913-X/TABLES/4>.
9. IPSOS: II Encuesta Nacional de Derechos Humanos: Población LGBT, https://www.ipsos.com/sites/default/files/ct/news/documents/2020-06/presentacion_ii_encuesta_nacional_ddhh.pdf, (2019).
10. Centro de Promoción y Defensa de los Derechos Sexuales y Reproductivos (PROMSEX): Informe anual sobre la situación de los derechos humanos de las personas LGBTI en el Perú 2020. , Lima (2021).
11. Lovelock, M.: Reality TV and queer identities: Sexuality, authenticity, celebrity. Springer International Publishing (2019). <https://doi.org/10.1007/978-3-030-14215-5/COVER>.
12. Saneleuterio, E., Soler-Campo, S.: Validación y aplicación de un instrumento para el análisis de estereotipos de género en largometrajes de dibujos animados. *Prof. la Inf.* 30, 1–13 (2021). <https://doi.org/10.3145/EPI.2021.SEP.03>.
13. Monforte, J., Úbeda Colomer, J.: ‘Como una chica’: un estudio provocativo sobre estereotipos de género en educación física. *Retos nuevas tendencias en Educ. física, Deport. y recreación*. 36, 74–79 (2019).
14. Barreda, A., Peña, N., Yana, V.: Estereotipos de género: autopercepción de estudiantes universitarios. *Santiago*. 157, 271–284 (2022).
15. Marañón, F., Muñiz, C., Barrientos, R.: Los estereotipos de género en las campañas electorales de 2018 en México. Análisis de la representación de la mujer en los spots electorales. *Rev. Comun.* 20, 207–222 (2021). <https://doi.org/10.26441/RC20.2-2021-A11>.
16. Celorio, M.: Violencia biopolítica contra poblaciones de la diversidad sexual: homofobia, derechos humanos y ciudadanía precaria. *El Cotid.* 32, 17–29 (2017).
17. Zurian, F.A., Martínez, D., Gómez, H.: La ficción en la televisión generalista norteamericana y la representación de (nuevas) masculinidades. *Área Abierta*. 15, 53–62 (2015). https://doi.org/10.5209/REV_ARAB.2015.V15.N1.47609.
18. Gay and Lesbian Alliance Against Defamation (GLAAD): Where We Are on TV 2019–2020. (2019).
19. Monaghan, W.: Post-gay television: LGBTQ representation and the negotiation of ‘normal’ in MTV’s *Faking It*. *Media, Cult. Soc.* 43, 428–443 (2020). <https://doi.org/10.1177/0163443720957553>.
20. Youngbauer, V.W., Jones, J.: Cloned This Way: Emphatic Dissonance and Mixed Messages in the Representations of Non-Heterosexual Sex Acts in Three Television Series. *Taboo J. Cult. Educ.* 17, 44–54 (2018). <https://doi.org/10.31390/taboo.17.3.06>.
21. Dyer, R.: *The matter of images: essays on representations*. Routledge, London (1993).
22. Gazzola, S.B., Morrison, M.A.: Cultural and Personally Endorsed Stereotypes of Transgender Men and Transgender Women: Notable Correspondence or Disjunction? *Int. J. Transgenderism*. 15, 76–99 (2014). <https://doi.org/10.1080/15532739.2014.937041>.
23. Renzetti, C., Edleson, J.: *Encyclopedia of Interpersonal Violence*. SAGE Publications, Inc, Thousand Oaks, California (2008). https://doi.org/10.4135/9781412963923_NV_2.
24. Campo-Arias, A., Oviedo, H.C., Herazo, E.: Correlación entre homofobia y racismo en estudiantes de medicina. *Psicol. desde el Caribe*. 31, 25–37 (2014). <https://doi.org/10.14482/psdc.31.1.5331>.

25. Bond, B., Miller, B., Aubrey, J.: Sexual References and Consequences for Heterosexual, Lesbian, Gay, and Bisexual Characters on Television: A Comparison Content Analysis. *Mass Commun. Soc.* 22, 72–95 (2019). <https://doi.org/10.1080/15205436.2018.1489058>.
26. Yan, H.Y.: “The Rippled Perceptions”: The Effects of LGBT-Inclusive TV on Own Attitudes and Perceived Attitudes of Peers Toward Lesbians and Gays. *Journal. Mass Commun. Q.* 96, 848–871 (2019). <https://doi.org/10.1177/1077699018821327>.
27. Waggoner, E.B.: Bury Your Gays and Social Media Fan Response: Television, LGBTQ Representation, and Communitarian Ethics. *J. Homosex.* 65, 1877–1891 (2018). <https://doi.org/10.1080/00918369.2017.1391015>.
28. Rowden, C.: Who do you think you’re talking to? Transgender representation on the television show transparent, <https://openrepository.aut.ac.nz/server/api/core/bitstreams/23028ff6-6599-4319-8fbc-ff51dae86701/content>, (2018).
29. Flick, U.: *The SAGE Handbook of qualitative data collection*. SAGE Publications Ltd, Thousand Oaks, California (2018).
30. Chang, Q.: The contribution of a hermeneutic approach to investigate psychological variables in second language acquisition. *Front. Psychol.* 13, 1–7 (2022). <https://doi.org/10.3389/fpsyg.2022.1055249>.
31. Bengtsson, M.: How to plan and perform a qualitative study using content analysis. *NursingPlus Open.* 2, 8–14 (2016). <https://doi.org/10.1016/j.npls.2016.01.001>.
32. Grawitz, M.: *Métodos y técnicas de las ciencias sociales*. Editia Mexicana, México, D. F (1987).
33. Redhead, E., Rocha, C.: De vuelta al barrio, <https://www.americatv.com.pe/de-vuelta-al-barrio>, (2017).
34. Rodríguez, C.: Los Vílchez, <https://tvgo.americatv.com.pe/los-vilchez>, (2021).
35. Zuloaga, M.: Junta de vecinos, <https://www.americatv.com.pe/junta-de-vecinos>, (2021).
36. Espinoza, A., Saavedra, D.: Representación de los personajes homosexuales en las series de televisión nacional: Al fondo hay sitio, así es la vida y yo no me llamo Natacha, <http://repositorio.uss.edu.pe/handle/20.500.12802/4707>, (2018).
37. Fisher, D., Hill, D., Grube, J., Gruber, E.: Gay, lesbian, and bisexual content on television: A quantitative analysis across two seasons. *J. Homosex.* 52, 167–188 (2007). https://doi.org/10.1300/J082V52N03_08.
38. Sandoval, M.: Los efectos de la televisión sobre el comportamiento de las audiencias jóvenes desde la perspectiva de la convergencia y de las prácticas culturales. *Univ. Psychol.* 5, 205–222 (2006).
39. Ramos, C.: Los medios de comunicación, constructores de lo real. *Grup. Comun.* 3, 108–112 (1995). <https://doi.org/10.3916/C05-1995-20>.
40. Thomson, K.: An Analysis of LGBTQ+ Representation in Television and Film. *An Undergrad. J. Contemp. Connect.* 5, 1–9 (2021).
41. Hart, K.-P.: Representing Gay Men on American Television. *J. Men’s Stud.* 9, 59–79 (2000). <https://doi.org/10.3149/JMS.0901.59>.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial 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 license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license 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.

