

## REVIEW ARTICLE

# A Review of the Traditional Chinese Medicine Glossary of Meridian Pathways and Its English Translations

Hui-Ping Ng, MMSc; Yu-Chen Lee, PhD; Iona MacDonald, MA; Bih-Cheng Chen, PhD

### ABSTRACT

The meridian and collateral theory in traditional Chinese medicine (TCM) provides practitioners with essential guidance about the complex network of meridians and collateral systems, as well as informing discussions on physiopathology, diagnoses, and treatments. Various translations have enabled nonnative Chinese to understand the intricacy of the meridian pathways. However, original meanings are easily lost in the text transcription and translation, leading to misinterpretation and confusion in the learning process. We set out to (a) review the standard

glossary that describes the meridian pathways; (b) review English translations of the bladder meridian pathway in selected sources; and (c) propose more accurate English translations of both. Our proposed texts offer preliminary guidance on the standardization of the terminology describing the meridian pathways and remind us of the importance of being as precise as possible when translating TCM literature, so that the work retains its original meaning. (*Altern Ther Health Med.* 2022;28(2):50-57).

**Hui-Ping Ng, MMSc**, is a TCM Physician in the Singapore Chung Hwa Medical Institution. Hui-Ping graduated in 2019 from the International Master Program in Acupuncture, China Medical University, Taichung, Taiwan. **Yu-Chen Lee, PhD**, is the Chief Attending Physician at the Graduate Institute of Acupuncture Science, China Medical University, Taichung City, Taiwan and the Chief Attending Physician in the Acupuncture Department, China Medical University Hospital, Taichung City, Taiwan. **Iona MacDonald, MA**, is a researcher and editor at the Graduate Institute of Acupuncture Science, China Medical University, Taichung City, Taiwan. **Bih-Cheng Chen, PhD**, is an Associate Professor at the School of Post-Baccalaureate Chinese Medicine, China Medical University and Jenteh Junior College of Medicine, Nursing and Management, Taichung City, Taiwan.

Corresponding author: Bih-Cheng Chen, PhD  
E-mail address: [cbc@mail.cmu.edu.tw](mailto:cbc@mail.cmu.edu.tw)

### INTRODUCTION

The meridian and collateral theory evolved from the need to explain the complex network of meridians and collaterals (經絡 *Jing luo*) in the human body, as originally conceived by traditional Chinese medicine (TCM) practitioners approximately 2500 years ago. It provides essential guiding principles for discussions concerning

physiology, pathology, diagnoses, and acupuncture treatment.<sup>1</sup> The World Health Organization (WHO) has defined the *meridians* and *collaterals* as “a system of conduits through which *qi* and blood circulate, connecting the bowels, viscera, extremities, superficial organs and tissues, making the body an organic whole, the same as channels and networks; meridians or channels, in short.”<sup>2</sup>

### Ancient Studies

One of the earliest surviving medical texts is the *Huang Di Nei Jing*. The date of its composition is controversial. Some scholars suggest that it was written by several different contributors during the period of the Warring States (475–221 BCE) and completed during the Han Dynasty (206 BCE–220 CE).<sup>3</sup> Various physicians incorporated their own understandings into this text, leading to inconsistencies in the writing style. *Huang Di Nei Jing* has had enormous influence on TCM practice. In particular, the detailed description of meridian pathways in *Ling Shu* (Chapter 10: The Conduit Vessel) has served as the basis for meridian acupoint maps, bronze statues representing acupoints, literature on acupuncture, and others. However, these educational tools do not reflect the actual maps of meridian pathways. They can provide only sequential line maps of acupoints. They fail to illustrate the relationship between visceral organs and bowels, as well as the acupoints and the depths of acupoints in the different muscle layers. Moreover, the actual start and end points of each meridian may not be

the first and last acupoints in the meridian acupoint maps. These misrepresentations can easily mislead students when learning about acupuncture.

The *Compendium of Meridians and Collaterals* 經絡全書, published during the Ming Dynasty, documents the characteristics of meridians and collaterals, which are literally translated as “Channels on the body include meridians, collaterals, and sinews.” There are single or bilateral meridians and there are collaterals of different sizes. Each has a vertical channel, branches, main channel, and a divergent channel. The endpoints of the *qi* propagation include 端: “the end of”; 俞: “acupoint”; 上: “up”; 下: “down”; 內: “internal”; 外: “external”; 前: “anterior”; 後: “posterior”; 中: “central”; 間: “in between”; 側: “lateral”; 交: “overlap or intersect”; and 會: “meet.” The ways of *qi* propagation include 上: “ascend”; 下: “descend”; 出: “emerge”; 入: “enter”; 徑: “shortcut”; 直: “direct”; 橫: “horizontally”; 斜: “obliquely”; 起: “begin”; 从: “from”; 及: “and”; 循: “follow along”; 歷: “pass through sequentially”; 注: “instill”; 行: “travel in parallel”; 走: “move forward slowly”; 之: “go to”; 去: “leave”; 過: “pass by”; 還: “to backtrack”; 絡: “connect to”; 繞: “to wind”; 系: “attach”; 屬: “affiliate with”; 結: “join”; 合: “converge”; 交: “overlap or intersect”; 貫: “penetrate”; 布: “distribute”; 散: “disperse”; 至: “reach”; 抵: “arrive”; 並: “side by side”; 挾: “travel bilaterally”; 別: “diverge”; and 約: “constraint”, among others. Hence, each Chinese character has its unique definition; any omission or revision of these characters in the meridian pathways may cause confusion.

### Modern Studies

Among recent investigations into the physical existence of meridians and collaterals, the following provide important evidence about the anatomical structure and physiological properties of the meridians and acupoints.

**Electrodermal Screening.** Since the 1950s, various researchers, including Niboyet,<sup>4</sup> Natakani,<sup>5,6</sup> and Voll,<sup>7</sup> have each independently identified electrical characteristics of points on the skin that correspond with acupoints on the meridians. In particular, Dr Natakani documented a series of points with high electrical conductivity (or low electrical resistance) forming longitudinal lines on the body that closely match with corresponding meridians.<sup>8</sup>

**Imaging Studies.** Radioactive tracing using Technetium 99m (99mTc, as sodium pertechnetate) has been used to investigate meridian pathways in the human body.<sup>9</sup> The radiotracer indicates preferential pathways coinciding with meridian pathways that are distinguishable from lymphatic and vascular routes. Other investigations into the existence of meridians have included infrared thermography, in which the researchers have attempted to show the responses to acupuncture.<sup>10,11</sup> However, although thermograms are thought to show the weak luminescent pathway of the meridians, their results have highlighted inconsistencies between the meridians.

**Myoelectricity Studies.** In one study, applying light taps in combination with electrical impulse stimuli identified

what was described as latent propagational sensation lines along the channels across the large intestine and stomach meridians.<sup>12</sup>

**Low Hydraulic Resistance Channels.** Preclinical investigations have identified low hydraulic resistance channels along the meridians, in which isotope migration along the stomach meridian was detected using isotope tracing.<sup>13,14</sup>

**The Neural Hypothesis.** Other research suggests that the neural hypothesis is the most logical explanation for the mechanism of action underlying acupuncture.<sup>15</sup> This investigation pointed out that although some studies have demonstrated that vascular occlusion or local anesthetic blockage of the cutaneous nerves did not alter the influence of acupuncture in the forearm, there was clinical evidence showing that infiltration of the deep nerves at the acupoints impaired the analgesic response associated with acupuncture. However, despite the evidence supporting the neural hypothesis, it remains unclear why certain conditions can be treated only with the involvement of specific meridians or acupoints.

Langevin and Wayne<sup>16</sup> point out that acupuncture research is limited by the lack of clear terminology and rigorous study concerning acupoints. Moreover, they highlight the fact that the traditional concept of acupuncture “meridians” has led to much controversy and confusion around acupoints. This is illustrated by the various translations of the original text of the meridian pathways in *Ling Shu* (Chapter 10), which have enabled nonnative Chinese to understand the intricacy of the meridian pathways. However, through the centuries, different transcriptions and translations of the texts have led to misinterpretation and confusion of the original meanings.

We set out to (a) review the standard glossary used to describe the distribution of meridians and collaterals, (b) review English translations of the bladder meridian pathway in selected major sources, and to (c) propose more accurate English translations of both.

### METHODS

We reviewed Huang’s text on the commonly used Chinese characters in the ancient literature describing the distribution of meridian and collateral pathways.<sup>1</sup> We translated the definition of each term based on the Chinese text provided by Huang.

We compared the descriptive nomenclature from a selection of English translations of the bladder meridian: *Chinese Acupuncture and Moxibustion*,<sup>17</sup> *Acupuncture Channels and Points: An Interactive Study and Reference Manual*,<sup>18</sup> *A Manual of Acupuncture*,<sup>19</sup> *Acupuncture: A comprehensive text*,<sup>20</sup> and *Huang Di Nei Jing Ling Shu: The Ancient Classic on Needle Therapy*.<sup>21</sup> Based on our analysis, we propose a standard glossary that may be used for English translations of the meridian and collateral pathways. We provide appropriate English text for the bladder meridian as an example of problems encountered with the current comprehension of meridian pathways.

**Table 1.** Glossary of the 40 Most Common Chinese Descriptive Terms Used in the Meridian Pathways

Huang's 40 Most Common Descriptions	Huang's Definition	Our Proposed English Translation of the Term	Our Proposed Definition
1. 起	本經的起點	"Begin"	The starting point of the main channel
2. 至	本經或某段的終點	"Reach"	Reach the terminal point of the main channel or certain part of the channel
3. 從	本經某段或支脈的起點	"Originates from; from"	The starting point of a branch or a certain section of the main channel
4. 抵	本經所至某依顯著部位	"Arrive at"	Arrive at a certain location in the main channel
5. 直者	本經的主幹	"Main channel"	The main channel
6. 支者	本經的支脈	"A branch"	A branch of the main channel
7. 絡	本經的細小分支；網路；連絡	"Collaterals; networks; connect with"	Fine branch of the main channel; networks; connect
8. 別	主幹或絡脈分為兩支	"Diverge"	The main channel or the collateral diverges to form two branches (of similar size)
9. 散	絡脈再行分散	"Disperse"	The collaterals continue to disperse
10. 布	絡脈滿佈組織之間	"Distribute"	The collaterals are distributed between the tissues
11. 歷	普遍並有順序的經過 (遍及各處)	"Pass through sequentially"	Pass through sequentially throughout the body
12. 加	附加一段經脈	"Extend"	Extend another section of meridian
13. 循	沿著本經部位的組織器官	"Follow along"	Follow the tissues and organs along the meridian
14. 行	與他經平行	"Travel in parallel"	Travel in parallel with another meridian
15. 走	經過某器官時緩緩前進	"Move forward slowly"	Move forward slowly through the tissue and organs
16. 趨	快步走向本經的一段	"Hasten"	Hasten through certain parts of the meridian
17. 直	朝著直的方向而行	"Vertical"	Travel vertically
18. 橫	朝著橫的方向而行	"Horizontal"	Travel horizontally
19. 斜	朝著斜的方向而行	"Oblique"	Travel obliquely
20. 屈	沿著某組織器官屈曲往下而行	"Bend"	Bend around the tissues and organs and move down
21. 環	包圍某組織器官的四周	"Surrounding"	Surround the tissues and organs
22. 繞	圍繞某組織器官的一部分	"To wind"	To wind around part of the tissues and organs
23. 挾	行於某組織器官的兩側	"Travel bilaterally"	Travel on both sides of the tissues and organs
24. 貫	穿過某組織器官之中	"Penetrate"	Penetrate tissues and organs
25. 出	由深處而淺出	"Emerge"	Emerge from the deep layer to the superficial layer
26. 入	由淺處而深入	"Enter"	Enter at the superficial layer and travel to the deep layer
27. 上	由下往上行	"Ascend"	Ascend from below
28. 下	由上往下行	"Descend"	Descend from above
29. 還	由原路折回	"To backtrack"	Backtrack along the original path
30. 卻	不由原路折回	"To return"	Return along a different path
31. 屬	與本經所屬的臟腑直接連屬	"Affiliate with"	Directly connect with the affiliating organ
32. 絡	與本經互相表裏經的臟腑互相連絡	"Connect with"	Connect with the organ of another meridian through an exterior-interior relationship
33. 連	與某組織器官互相連繫	"Link"	Link with specific tissues and organs
34. 繫	與某組織器官僅作輕微的連繫	"Attach"	Minimal attachment with the tissues and organs
35. 過	在不屬於本經的胸穴或器官經過	"Pass by"	Pass by the tissues and organs that are not affiliated with the meridian
36. 注	本不連接但在固定的時間內，因氣血灌注而作暫時連接	"Instill"	No direct connection exists. Rather, a transient connection exists between the <i>qi</i> and blood instillation at any specific time
37. 交	與他經或本經左右兩經交叉而過 (1)平面交叉 (2)立體交叉	"Overlap or intersect"	Criss-cross with another meridian, or the left and right branches of the same meridian cross over each other, in an overlapping or intersecting manner
38. 會	與他經相遇	"Meet"	Meet with another meridian
39. 合	與他經行走靠近或匯合	"Converge"	Connect closely with or converge with another channel
40. 約	約束他經脈絡使勿干擾	"Constrain"	Constrain another meridian to avoid disturbing <i>qi</i>

## RESULTS

Each Chinese character used to describe the meridian pathways in *Ling Shu* (Chapter 10) of *Huang Di Nei Jing* has a unique meaning. Professor Wei-San Huang, a renowned TCM expert and medical educator in Taiwan, identified 40 commonly used Chinese terms describing the meridian pathways in the *Huang Di Nei Jing* text.<sup>1</sup> Some Chinese characters were used only once, whereas others were repeated

many times. Huang's 1997 review suggests definitions for each Chinese descriptive term used for the meridian pathways. The glossary in Table 1 reviews each definition and details our proposed English translations of the commonly used Chinese descriptive terms.

Table 2 provides the frequencies with which the original Chinese terms appear in each of the 12 primary meridians.

**Table 2.** The Frequencies With Which the Original Chinese Terms Appear in Each of the 12 Primary Meridians

Original Chinese Term	Translation	LU	LI	ST	SP	HT	SI	BL	KI	PC	TE	GB	LR	Total
1. 起	“Begin”	1	1	1	1	1	1	1	1	1	1	1	1	12
2. 至	“Reach”	0	0	2	0	0	2	2	0	0	2	2	0	10
3. 從	“Originates from; from”	2	1	2	1	2	1	4	2	1	2	2	1	21
4. 抵	“Arrive at”	0	0	1	0	1	2	1	0	0	0	2	1	8
5. 直者	“Main channel”	0	0	1	0	1	0	0	0	1	0	1	0	4
6. 支者	“A branch”	1	1	4	1	1	2	3	1	2	2	3	2	23
7. 絡	“Collaterals; networks; connect with”	1	0	0	0	0	1	1	1	1	1	0	0	6
8. 別	“Diverge”	0	0	2	1	0	1	2	1	0	0	2	1	10
9. 散	“Disperse”	0	0	0	1	0	0	0	0	0	1	0	0	2
10. 布	“Distribute”	0	0	0	0	0	0	0	0	0	1	0	1	2
11. 歷	“Pass through sequentially”	0	0	0	0	0	0	0	0	1	0	0	0	1
12. 加	“Extend”	0	0	0	0	0	0	0	0	0	0	1	0	1
13. 循	“Follow along”	3	2	7	2	2	5	3	2	3	2	6	3	40
14. 行	“Travel in parallel”	1	0	0	0	1	0	0	0	2	1	0	0	5
15. 走	“Move forward slowly”	0	0	0	0	0	0	0	0	0	1	1	0	2
16. 趨	“Hasten”	0	0	0	0	0	0	0	1	0	0	0	0	1
17. 直	“Vertical”	1	0	0	0	0	1	1	0	0	0	1	1	5
18. 橫	“Horizontal”	1	0	0	0	0	0	0	0	0	0	1	0	2
19. 斜	“Oblique”	0	0	0	0	0	1	0	1	0	0	0	0	2
20. 屈	“Bend”	0	0	0	0	0	0	0	0	0	1	0	0	1
21. 環	“Surrounding”	0	0	1	0	0	0	0	0	0	0	0	1	2
22. 繞	“To wind”	0	0	0	0	0	1	0	0	0	0	0	1	2
23. 挾	“Travel bilaterally”	0	2	0	1	1	0	2	1	0	0	0	1	8
24. 貫	“Penetrate”	0	1	0	0	0	0	3	0	0	0	1	2	7
25. 出	“Emerge”	2	1	1	1	1	3	2	2	1	4	3	0	21
26. 入	“Enter”	1	2	6	1	1	1	2	1	2	1	2	2	22
27. 上	“Ascend”	2	3	1	5	2	2	1	3	1	4	1	6	31
28. 下	“Descend”	3	1	6	0	5	1	5	0	2	2	8	1	34
29. 還	“To backtrack”	1	1	0	0	0	0	1	0	0	0	1	0	4
30. 卻	“To return”	0	0	1	0	1	1	0	0	0	0	1	0	4
31. 屬	“Affiliate with”	1	1	1	1	1	1	1	1	1	1	1	1	12
32. 絡	“Connect with”	1	1	1	1	1	1	1	1	1	1	1	1	12
33. 連	“Link”	0	0	0	1	0	0	0	0	0	0	0	1	2
34. 繫	“Attach”	0	0	0	0	1	0	0	0	0	1	0	0	2
35. 過	“Pass by”	0	0	1	1	0	0	1	0	0	1	1	1	6
36. 注	“Instill”	0	0	0	1	0	0	0	1	0	0	0	1	3
37. 交	“Overlap or intersect”	0	1	2	1	0	1	0	0	0	2	1	1	9
38. 會	“Meet”	0	1	0	0	0	0	0	0	0	0	0	1	2
39. 合	“Converge”	0	0	0	0	0	0	1	0	0	0	3	0	4
40. 約	“Constrain”	0	0	1	0	0	0	0	0	0	0	0	0	1

Abbreviations: LU, lung meridian; LI, large intestine meridian; ST, stomach meridian; SP, spleen meridian; HT, heart meridian; SI, small intestine meridian; BL, bladder meridian; KI, kidney meridian; PC, pericardium meridian; TE, triple energizer (*San Jiao*) meridian; GB, gallbladder meridian; LR, liver meridian.

We have divided the original Chinese text detailing the bladder meridian of foot-*Taiyang* pathway into sections, each of which correspond with various English translations; the matching pairs of texts are denoted in Table 3. The translations differ in their interpretations of the pathway. The different translations are inconsistent in their rendering of various terms (e.g., referencing of acupoints and 5th vs fifth). We have presented all terms as we identified them in the source files. Of all 5 sources, *A Manual of Acupuncture*, *Acupuncture: A Comprehensive Text* and *Chinese*

*Acupuncture and Moxibustion* are educational textbooks used by reputable TCM colleges and universities as well as the National Certification Commission for Acupuncture and Oriental Medicine (NCCAOM) in the United States. *Huang Di Nei Jing Ling Shu: The Ancient Classic on Needle Therapy* is one of many books translated from the ancient Chinese texts by Paul Unschuld.<sup>22</sup> *Acupuncture Channels and Points: An Interactive Study and Reference Manual* is a reference textbook that is used by some Australian TCM colleges.

**Table 3.** Comparison of Translations of the Bladder Meridian of Foot-*Taiyang*

No.	Original Text	Source 1	Source 2	Source 3	Source 4	Source 5
1.	起於目內眥	<b>Begins</b> at the inner canthus of the eye at <i>Jingming</i> BL-1.	<b>Begins</b> at B-1 ( <i>Jingming</i> ) at the inner canthus of the eye.	The bladder meridian of foot- <i>Taiyang</i> <b>starts</b> from the inner canthus ( <i>Jingming</i> , BL-1).	The main pathway <b>begins</b> at the inner canthus of the eye at <i>Jingming</i> BL-1.	The foot major yang (conduit) vessels of the urinary bladder: They <b>originate</b> from the inner corner of the eye.
2.	上額交巔	<b>Ascends</b> along the forehead to the vertex to <b>intersect</b> with <i>Tóulingqi</i> GB-15, <i>Shéngting</i> DU-24, and <i>Bǎihui</i> DU-20.	<b>Ascends</b> across the forehead, <b>intersecting</b> the governing channel at point GV-24 ( <i>Shéngting</i> ), and the gallbladder channel at point GB-15 ( <i>Tóulingqi</i> ). It then crosses to the vertex and again intersects the governing channel at point GV-20 ( <i>Baihui</i> ).	<b>Ascending</b> to the forehead, it <b>joins</b> the governor vessel at the vertex ( <i>Baihui</i> , GV-20).	<b>Ascends</b> over the forehead <b>joining</b> <i>Du Mai</i> at the vertex at <i>Baihui</i> DU-20.	They <b>ascend</b> at the forehead and <b>cross</b> on the skull.
3.	其支者從巔至耳上角	<b>From</b> the vertex, a <b>branch descends to</b> the temples in the region above the ear, intersecting the gall bladder channel at points <i>Qūbin</i> GB-7, <i>Shuàigǔ</i> GB-8, <i>Tiānchōng</i> GB-9, <i>Fúbái</i> GB-10, <i>Tóuquì'àoyīn</i> GB-11, and <i>Wángǔ</i> GB-12.	<b>From here, a branch descends to</b> the area above the ear, joining the gallbladder channel at points GB-7 ( <i>Qubin</i> ), GB-8 ( <i>Shuaigu</i> ), and GB-12 ( <i>Wangu</i> ).	Where a <b>branch arises, running to</b> the temple.	<b>From</b> the vertex at <i>Baihui</i> DU-20, a <b>branch descends to</b> the temple to intersect with and follow the gallbladder points around the ear.	Their branches <b>extend from</b> the top of the skull <b>to</b> the upper corners of the ears.
4.	其直者從巔直絡腦還出別下項	<b>From</b> the vertex, <b>another branch enters</b> the brain, meets the Governing vessel at <i>Nǎohù</i> DU-17 and then <b>emerges to descend</b> to the nape of the neck where the channel splits into 2 branches.	A <b>vertical branch enters</b> the brain at the vertex and intersects with the governing channel at point GV-17 ( <i>Naohu</i> ), before <b>emerging and descending</b> along the nape of the neck.	A <b>straight portion</b> of the meridian <b>enters and communicates</b> with the brain from the vertex. It then <b>emerges and bifurcates to descend</b> along the posterior aspect of the neck.	<b>From</b> the vertex, the <b>main branch enters</b> the brain, intersects with <i>Du Mai</i> at <i>Naohu</i> DU-17, then <b>emerges and splits</b> into 2 branches at the nape of the neck.	Their <b>straight courses extend from</b> the top of the skull into (the head) and <b>connect</b> with the brain. They then <b>turn around and appear</b> . Another branch <b>descends</b> along the nape.
5.	循肩膊內		And the muscles of the medial aspect of the scapula.	Running downward <b>alongside</b> the medial aspect of the scapula region.		<b>Extends inside</b> the shoulder blade.
6.	挾脊，抵腰中	Descends along the posterior aspect of the neck, intersecting <i>Dàzhui</i> DU-14 and <i>Táodào</i> DU-13, then <b>descends alongside</b> the spine, 1.5 cun lateral to the midline, <b>to</b> the lumbar region.	Here, the bladder channel meets the governing channel at points GV-14 ( <i>Dazhui</i> ) and GV-13 ( <i>Taodao</i> ), after which it continues downward, <b>parallel</b> to the spine, <b>to</b> the lumbar region.	<b>Parallel</b> to the vertebral column, it <b>reaches</b> the lumbar region.	At the nape of the neck, the medial branch runs downward 1.5 cun <b>parallel</b> to the vertebral column until it <b>reaches</b> the lumbar region, where a branch enters the body (see other branch).	<b>Moves along</b> the spine and <b>reaches</b> the lower back.
7.	入循臂	<b>Penetrates</b> deep into the interior via the paravertebral muscles.	The channel then <b>enters</b> the internal cavity via the paravertebral muscles.	Where it <b>enters</b> the body cavity via the paravertebral muscle.	The other branch in the lumbar region the channel <b>enters</b> the body cavity via the paravertebral muscles.	Where it <b>enters</b> the flesh adjacent to the spine and <b>follows</b> it.
8.	絡腎，屬膀胱	<b>Link</b> with the kidneys and <b>connects</b> with the bladder.	<b>Communicates</b> with the kidneys, and finally <b>joins its associated organ</b> , the bladder.	<b>Connect</b> with the kidney and <b>join its pertaining organ</b> , the bladder.	To <b>connect</b> with the kidney and the bladder.	It then <b>wraps</b> the kidneys and <b>connects</b> with the urinary bladder.
9.	其支者從腰中，下挾脊，貫臀，入臑中	A <b>subbranch</b> separates in the lumbar region, <b>descends along</b> the sacrum, <b>crosses</b> the buttock, and <b>descends to</b> the popliteal fossa of the knee at <i>Wēizhōng</i> BL-40.	<b>Another branch separates</b> in the lumbar region, <b>crosses</b> the buttock, and <b>descends to</b> the popliteal fossa of the knee.	The <b>branch</b> of the lumbar region <b>descends through</b> the gluteal region and <b>ends</b> in the popliteal fossa.	The medial branch <b>continues down along</b> the sacrum, <b>crosses</b> the buttock, and <b>descends to</b> the popliteal fossa of the knee.	<b>(Further) branches originate from</b> the lower back and <b>descend along</b> the spine, <b>penetrate</b> the buttocks and <b>enter</b> the hollow of the knee.
10.	其支者從膊內左右，別下貫臑，挾脊內	<b>Separates</b> at the nape of the neck and <b>descends to</b> the medial border of the scapula and then <b>parallel</b> to the spine, 3 cun lateral to the midline, to the gluteal region.	Yet <b>another branch separates</b> from the main channel at the back of the neck and <b>descends, parallel</b> to the spine, from the medial side of the scapula to the gluteal region.	The <b>branch</b> from the posterior aspect of the neck <b>runs straight downward along</b> the medial border of the scapula.	The <b>lateral branch runs down</b> from the neck 3 cun <b>parallel</b> to the spine.	<b>(Further) branches originate</b> on the left and right from the shoulder bones and <b>extend separately downward, penetrate</b> the shoulder blades. They <b>extend next to</b> the spine into the interior.

**Table 3.** (continued)

11.	過髀樞，循髀外後廉，下合膕中	<b>Crosses</b> the buttock to intersect at <i>Huántiào</i> GB-30, then <b>descends along</b> the posterolateral aspect of the thigh to <b>meet</b> with the previous branch of the channel in the popliteal fossa at <i>Wéizhōng</i> BL-40.	Here, it <b>crosses</b> the buttock to intersect the gallbladder channel at point GB-30 ( <i>Huantiao</i> ) and then <b>descends</b> across the lateral, posterior aspect of the thigh to <b>join</b> with the other branch of this channel in the popliteal fossa.	<b>Passing through</b> the gluteal region ( <i>Huantiao</i> , GB-30) <b>downward along</b> the lateral aspect of the thigh, it <b>meets</b> the preceding branch <b>descending</b> from the lumbar region in the popliteal fossa.	It reaches the gluteal region, where it <b>crosses</b> the buttock and intersects with the gallbladder channel at <i>Huantiao</i> GB-30, <b>descends along</b> the posterolateral aspect of the thigh to <b>meet</b> with the medial branch in the popliteal fossa, the 2 branches <b>merge</b> .	<b>Pass</b> the trochanters, <b>follow</b> their outer side and <b>descend</b> via their posterior edge, where they <b>tie up</b> with the hollow of the knee.
12.	以下貫膕肉	<b>Descends</b> through the gastrocnemius muscle.	<b>Continuing downward</b> through the gastrocnemius muscle.	From there it <b>descends</b> to the leg.	The channel <b>descends through</b> the gastrocnemius muscle.	They <b>descend</b> further, <b>penetrate</b> the calf inside.
13.	出外踝之後	<b>Emerges</b> posterior to the lateral malleolus at <i>Kānlún</i> BL-60.	The channel <b>emerges</b> behind the external malleolus.	And <b>further</b> to the posterior aspect of the external malleolus.	<b>To</b> the lateral malleolus.	<b>Appear</b> behind the exterior knuckle.
14.	循京骨	Then <b>follows along</b> the fifth metatarsal bone.	Then <b>follows</b> the 5th metatarsal bone.	Then, <b>running along</b> the tuberosity of the 5th metatarsal bone.	<b>Runs along</b> the 5th metatarsal.	They <b>extend</b> along the metatarsal bones.
15.	至小趾外側	<b>Terminates</b> at <i>Zhiyīn</i> BL-67 at the lateral side of the tip of the fifth toe, where it meets with the kidney channel.	Crossing its tuberosity <b>to</b> the lateral tip of the little toe at point B-67 ( <i>Zhiyīn</i> ).	It <b>reaches</b> the lateral side of the tip of the little toe ( <i>Zhiyīn</i> , BL-67), where it links with the kidney meridian of foot- <i>Shaoyīn</i> .	It <b>reaches</b> the lateral side of the tip of the little toe at <i>Zhiyīn</i> BL-67, where it meets with the kidney channel.	<b>Reach</b> the outside of the little toe.

With reference to the glossary of the 40 most common Chinese descriptive terms given in Table 1, we propose the following description of the bladder meridian pathway:

The bladder meridian **begins** from the inner canthus of the eye, **ascends** to the forehead and **intersects** at the vertex. A **branch** from the vertex **reaches** the auricular apex region. The **main channel connects** the brain **vertically** from the vertex, then **backtracks, emerges, diverges, and descends** the nape. It **follows along** the medial border of the scapula. The left and right meridians **travel bilaterally** beside the vertebrae and **arrive** at the lumbar region, **entering** and **following along** the paravertebral muscle. They **connect** with the kidneys and **affiliate with** the bladder. A **branch** originates **from** the lumbar region and **descends bilaterally** beside the vertebrae, **penetrates** the hip, and **enters** the popliteal fossa of the knee. The left and right **branches originate** from their corresponding left and right medial aspects of the shoulders, then they **diverge, descend, and penetrate** the scapula, to **travel bilaterally** close to the vertebrae. Each branch **passes by** the posterior aspect of the femur, **follows along** the posterolateral aspect of the femur, then **descends to converge** with the other branch in the popliteal fossa. Each branch further **descends and penetrates** the gastrocnemius muscle, **emerges** at the posterior aspect of the lateral malleolus, **follows along** the fifth metatarsal bone, and **reaches** the lateral side of the little toe.

## DISCUSSION

The main objective of this review was to highlight the necessity of refining current English translations with respect to the TCM meridian pathways described in current educational texts, which are applied worldwide. There is also a need to standardize acupoint locations. Although the latter was partly addressed by the WHO in 2008, when they collaborated with renowned TCM experts to codify a

standardized system of acupoints,<sup>23</sup> their consensus is limited because their discussion focuses primarily on their codified system of acupoints and the location points. The WHO text also fails to provide location guides as to the acupoints. For instance, the *Lieque* acupoint (LU-7) is defined by the WHO as “on the radial aspect of the forearm, between the tendons of the abductor pollicis longus and the extensor pollicis brevis muscles, in the groove for the abductor pollicis longus tendon, 1.5 B-cun superior to the palmar wrist crease.”<sup>22</sup> However, to accurately locate the acupoint in the cleft between the bone and the tendon, the patient’s hand must be placed in a semiprone position.<sup>24</sup> As noted in a Chinese language review published in 2018, “The Study of Acupoint and Meridian Maps based on Bladder Meridian,”<sup>25</sup> some attempts have been made to standardize the acupoints based on the original ancient text, *Huang Di Nei Jing*, throughout TCM history. These standardizations are reflected in the ancient literature, including *Zhen Jiu Jia Yi Jing* 針灸甲乙經 (A-B Classic of Acupuncture and Moxibustion) [282 CE, Jin Dynasty], *Ming Tang Ren Xing Tu* 明堂人形圖 (*Illustration of the Human Body from the Hall of Brilliance*) [630 CE, Tang Dynasty], and *Bei Ji Qian Jin Yao Fang* 備急千金要方 (*Essential Prescriptions for Every Emergency Worth a Thousand in Gold*) [652 CE, Tang Dynasty]. During the Song Dynasty (960–1279 CE), 2 bronze figures were made that model the acupoints on the human body. Subsequently, during the Ming Dynasty (1368–1644 CE), a set of bronze figures was produced, consisting of a male, a female, and a child. The Song Dynasty is also associated with the emergence of the *Zhen Jiu Da Cheng* 針灸大成 (*The Great Compendium of Acupuncture and Moxibustion*), which curated literature, poems, and odes, and was the first to introduce the extraordinary acupoints. In 2008, the WHO codified acupuncture points based on *Zhen Jiu Jia Yi Jing* (A-B Classic of Acupuncture and Moxibustion), with the intention of

enhancing reproducibility and reliability of acupuncture research studies.<sup>23</sup> However, the WHO failed to address the problem reflected in modern-day textbooks and teaching materials, in which the combined illustration of acupoints connecting along the meridians depicted in the meridian-acupoint diagrams fail to reflect the actual or complete meridian pathway maps detailed in the ancient texts. Through the centuries, attempts to systematize the acupoints have caused problems with the misrepresentation and misinterpretation of the meridian pathways. We have discussed different English translations of the bladder meridian as just one example of a meridian pathway that has been misunderstood due to misinformed interpretations of the original text.

The Chinese characters that are most frequently used to describe the meridian pathways are 下 (“descend”), 循 (“follow along”) and 上 (“ascend”), reflecting the longitudinal travel of the 12 primary meridians. The *qi* pathway in the meridians consists of 3 *Hand-Yin* meridians from the chest to the hands, 3 *Hand-Yang* meridians from the hands to the head, 3 *Foot-Yang* meridians from the head to the foot, and 3 *Foot-Yin* meridians from the foot to the chest, where the cycle is then repeated. The meridians follow the musculoskeletal structures as well as those of the visceral and bowels.

The various English translations involve different interpretations and descriptions that do not necessarily encompass all the wider implications of each Chinese character. For example, as shown in Table 3, one English text interprets 交 as “intersect”, whereas other texts use “join”. An alternative meaning for this Chinese character encompasses the notion of crisscrossing, which can be interpreted as “overlap”, or “intersect”. If we consider the large intestine meridian pathway, for example, the ancient text documents 交 as follows: “... 交人中, 左之右, 右之左”, which can be interpreted as “... overlaps at the philtrum (Renzhong GV-26), with the left meridian traveling to the right, while the right meridian travels to the left”. Thus, this overlap represents a 3-dimensional crossover at *Renzhong* (GV-26). In clinical practice, a needling sensation transmitting to the right *Yingxiang* acupoint (LI-20) is felt when acupuncture is accurately applied to the left *Hegu* acupoint (LI-4). This explains why the right *Hegu* acupoint (LI-4) provides better therapeutic effects than the left for the treatment of left upper toothache. Notably, this same character that represents overlap or intersect is also used to describe the intersection of the stomach meridian and the conception vessel in the original text, as follows: 還出挾口, 環唇, 下交承漿, which can be interpreted as “the left and right meridians backtrack, emerge and travel bilaterally beside the mouth, surrounding the lips, then descend to intersect at the *Chengjiang* acupoint (CV-24)”. Because this sentence does not mention any sense of crossing over from left to right (or vice versa), the character has been interpreted here as “intersect”. Figure 1 illustrates this overlap/intersect conundrum.

Figure 1. Overlap/Intersect Conundrum



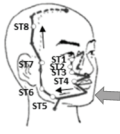


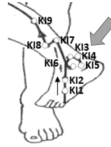

Glossary	交 (jiāo) Overlap/Intersect	
Illustration	Intersect in the same plane 	Three-dimensional overlap 
Definition	Crossover with another meridian, or there is crossover between the left and right branch of the same meridian	
Example	 胃經：還出挾口，環唇，下交承漿 The left and right stomach meridians backtrack, emerge and travel bilaterally beside the mouth, surrounding the lips, then descend to intersect at the <i>Chengjiang</i> acupoint (CV24).	 大腸經：...交人中，左之右，右之左 The large intestine meridian overlaps at the philtrum (Renzhong GV26), with the left meridian traveling to the right, while the right meridian travels to the left.

Figure 2. WHO Acupoint Codes

Glossary	別 (bié) Diverge	
Illustration		
Definition	The main channel or the collateral diverges to form 2 branches (of similar size).	
Example	 腎經：... 循內踝之後，別入跟中 The Kidney meridian follows the posterior border of the medial malleolus and diverges to enter deeply in the heel.	 In all of the meridian-acupoint diagrams, a loop is drawn at the medial malleolus <sup>22</sup> .

Another example is the Chinese term 別, which can be defined as “diverge”. It is mentioned twice in the bladder meridian pathway (Table 3, #4: 其直者從巔直絡腦還出別下項; #10: 其支者從膊內左右, 別下貫胛, 挾脊內). However, not all the references mention divergence in the second sentence. The same character is also used to describe the kidney meridian in the text 循內踝之後, 別入跟中, which can be interpreted as “it follows the posterior border of the medial malleolus and diverges to enter into the heel”. This indicates that there is a divergence at the posterior border of the medial malleolus. However, in almost all the meridian-acupoint diagrams and acupuncture statues, we have observed that a loop was drawn after connecting the WHO acupoint codes, instead of a divergence, as illustrated in Figure 2. In clinical practice, the needling sensation of the *Taixi* acupoint (KI-3) travels downward. The needling sensation has never looped around the medial malleolus, which provides clear evidence that this is misinterpretation.

Table 1 presents the glossary compiled by Professor Huang of the 40 most commonly used terms describing the meridian pathways, using evidence from the ancient texts,<sup>1</sup> with our proposed English translations of those terms. This

glossary and our translations can be used to standardize the translation of the 12 primary meridian pathways, the governing vessel and the conception vessel. Our proposed translation of the bladder meridian is supplied as an example that may help students to avoid any misinterpretation of the meridian pathways.

During the last 2000 years, many interpretations of the meridians have evolved. Various researchers have used modern scientific tools in their attempts to find evidence demonstrating the anatomical structure and physiological properties of the meridians and acupoints.<sup>15</sup> Longhurst's study has summarized findings from these investigations, including, for example, the primo vascular systems, imaging studies using radioactive tracers, studies of skin resistance, and the neural hypothesis.<sup>15</sup> Nevertheless, we lack research that verifies and clarifies misinterpretations of the meridian pathways. Our intention is to reveal potential problems arising from misunderstandings and misinterpretations of texts designed to teach students learning the meridian pathways. We hope that TCM experts, historians, and sinologists will be willing to meet and discuss ways to standardize the English (and other) language translations of the ancient texts. We propose that such meetings could achieve the following outcomes: (a) establish consensus as to which translated text(s) needs to be aligned with the ancient teaching; (b) identify which terms need to be standardized; (c) create a team of international experts with expertise in the areas of TCM, history, sinology, and philology. The expert committee would require linguistics experts in the fields of classical and modern Chinese, English, French, German, Japanese, and Korean literature. For each language, decisions on the best translated terms for standardized English texts will be finalized by native English speakers.

## CONCLUSION

The TCM medical literature is an immense collection of in-depth medical knowledge written by scholars and physicians. Increasingly, people are keen to pursue this knowledge and research the ancient texts in order to better understand the mechanisms and principles underlying TCM.

Significant differences between English translations of the ancient texts have created real challenges in the understanding of TCM knowledge and research endeavors. The original meanings may have been lost in translations and transcriptions, as the poems or odes in the original ancient texts do not easily translate into modern Chinese language and subsequently into another language.

Our proposed glossary and description of the meridian pathways offers a preliminary guide for a global Expert Committee considering how to standardize the descriptive terminology of the meridian pathways. We recommend that the TCM medical literature is translated as precisely as possible, to ensure that its original meanings are retained.

## AUTHOR DISCLOSURE STATEMENT

Ethics approval and consent to participate: Not applicable. Competing interests: The authors declare that they have no competing interests. Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

## REFERENCES

1. Huang WS. Cong "Neijing-Jing mai pian" yuan wen tan tao shi er jing mai zai ren ti fen bu de shi kuang. In: *Huang Wei-San Jiao Shou Zhong Yi Lun Wen Ji*. Taipei, Taiwan: JYIN Publishing Company; 1997.
2. WHO ROftWP. *WHO International Standard Terminologies on Traditional Medicine in the Western Pacific Region*. 1st ed. Geneva, Switzerland: World Health Organization; 2007.
3. Curran J. The Yellow Emperor's Classic of Internal Medicine. *BMJ*. 2008;336(7647):777-777.
4. Niboyet J, Bourdiol R, Regard P. *La moindre résistance a l'électricité de surfaces punctiformes et de trajets cutanés concordant avec les points et méridiens, bases de l'acupuncture*. *Traité D'Acupuncture*. Paris, France: Maisonneuve, Paris; 1963.
5. Nakatani Y. *A Guide for The Application of Ryodoraku Autonomous Nerve Regulatory Therapy*. Beijing, China: Chan's Books Products; 1972.
6. Nakatani Y, Oiso T. *A Guide for Application of Ryodoraku Autonomous Nerve Regulatory Therapy*. New York, NY: Routledge; 2018.
7. Voll R. *Twenty Years of Electroacupuncture Diagnosis in Germany. A Progress Report*. New York, NY: Routledge; 2015.
8. Lee YC, Ng HP, Chang YH, Ho WC. The development and application evaluation of meridian energy detection system in traditional oriental medicine: A preliminary study. *J Evid Base Complement Altern Med*. 2018;2018:13.
9. Darras JC, Albarède P, de Vernejoul P. Nuclear medicine investigation of transmission of acupuncture information. *Acupunct Med*. 1993;11(1):22.
10. Litscher G. Infrared thermography fails to visualize stimulation-induced meridian-like structures. *BioMed Engineer OnLine*. 2005;4:38-38.
11. Yang HQ, Xie SS, Hu XL, Chen L, Li H. Appearance of human meridian-like structure and acupoints and its time correlation by infrared thermal imaging. *Am J Chin Med*. 2007;35(2):231-240.
12. Zhu ZX, Yan ZQ, Yu SZ, Zhang RX, Wang JY, et al. Studies on the phenomenon of latent propagated sensation along the channels. I. The discovery of a latent PSC and a preliminary study of its skin electrical conductance. *Am J Chin Med*. 1981;9(3):216-224.
13. Zhang W-B, Tian Y-Y, Li H, et al. A discovery of low hydraulic resistance channel along meridians. *J Acupunct Meridian Stud*. 2008;1(1):20-28.
14. Zhang WB, Wang GJ, Fuxe K. Classic and modern meridian studies: A review of low hydraulic resistance channels along meridians and their relevance for therapeutic effects in traditional Chinese medicine. *Evid Base Complement Altern Med*. 2015;2015:410979.
15. Longhurst JC. Defining meridians: A modern basis of understanding. *J Acupunct Meridian Stud*. 2010;3(2):67-74.
16. Langevin HM, Wayne PM. What is the point? The problem with acupuncture research that no one wants to talk about. *Journal Altern Complement Med*. 2018;24(3):200-207.
17. Cheng X, Deng L. *Chinese acupuncture and moxibustion*. 16th ed. Beijing, China: Foreign Languages Press; 2015.
18. Campbell J. *Acupuncture Channels and Points: An Interactive Study and Reference Manual*. Sydney, Australia: Elsevier; 2008.
19. Deadman P, Baker K, Al-Khafaji M. *A Manual of Acupuncture*. London, United Kingdom: Journal of Chinese Medicine Publications; 2007.
20. O'Connor J, Bensky D, Yuan SZ. *Acupuncture: A Comprehensive Text*. Seattle, WA: Eastland Press; 1981.
21. Unschuld PU. *Huang Di Nei Jing Ling Shu: The Ancient Classic on Needle Therapy*. Los Angeles, CA: University of California Press; 2016.
22. Ye X, Dong M-H. A review on different English versions of an ancient classic of Chinese medicine: Huang Di Nei Jing. *Journal of Integrative Medicine*. 2017;15(1):11-18.
23. Lim S. WHO standard acupuncture point locations. *Evidence Base Complement Altern Med*. 2010;7(2):167-168.
24. Huang W-S, Chen B-C. *Zhen Jiu Ke Xue*. Taipei, Taiwan: Cheng Chung Bookstore; 2013.
25. Chen BC, Huang TY. The study of acupoint and meridian maps based on bladder meridian. *Taipei J Trad Chin Med*. 2018;21(1):111-122.