

*Partial Color Blindness and Rabbinic Examination of Blood**

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I. Presentation of the Problem

The ability to see colors and to distinguish between shades of color varies from one person to another. Such variations can result in differences in the ability to distinguish between the colors or shades of different stains. Variations in the ability to perceive colors are most often found in the red and green ranges and are quite common in males. Approximately 8% of the male population (as opposed to 0.5% of the female population) is effected. This problem of course impinges on halachic matters in a number of common situations. Can different rabbis perceive colors differently? Is there any halachic significance to such differences?

II. Prohibitive Colors in *Nidda*

In principle, only “five kinds of blood” render a woman *nidda* (Mishna *Nidda* 2:6):

Red, black, the color of a crocus, the color of earthy water, or like diluted wine.

What color is to be considered “red”? One like the blood of a wound.

“Black”? Like the sediment of ink. If it is darker, it is unclean. If lighter, it is clean.

“The color of a crocus”? Like the brightest shade in it.

“The color of earthy water”? Earth from the valley of Beit Kerem over which water is made to float.

“Diluted wine”? Two parts water and one of wine of Sharon.

This list of colors is accepted by the Baal Halachot Gedolot, Rambam (*Issurei Bi'ah* 5:7-11), and Semag (Neg. 111).

The Mishna lists the prohibitive colors and defines them in comparative terms. The Talmud (*Nidda* 19-20) makes it clear that the Amora'im actually made the required comparisons and issued their decisions accordingly. There were, however,

great Amora'im who refrained from issuing decisions regarding the color of stains since they had difficulty in distinguishing certain colors

great Amora'im who refrained from issuing decisions regarding the color of stains since they had difficulty in distinguishing certain colors. Among them were Rabbi Yohanan, Ula, Rabba, and Rav Ashi. Rabbi Yohanan at first did examine stains and issue decisions. But

he stopped after certain colors, which seemed to him to be permitted, were prohibited by Rabbi Hanina. Rav Ashi refrained from issuing decisions after he failed to distinguish between the colors of two samples of blood. It is important to note the possibility that common defects in color vision can easily explain the difficulty these Amora'im had in identifying colors. This possibility cannot be dismissed out of hand.

In the days of Rav Ashi the law of the Mishna prohibiting no more than five kinds of blood was still operative. Rav Achai Ga'on quotes the Mishna in full in his *She'iltot* (sect. 96, end). It also appears in the *Halachot Gedolot*.

* This article in its Hebrew version was submitted to Rabbi Avigdor Nebenzahl, who told me that he agrees with its halachic conclusions even though he does not consider himself conversant with the medical explanations presented. The article is being published with his approval.

In any event, Rav Saadia Ga'on (*Comm. ad Sefer ha-Yetsira* 2:2; quoted in *Toharat ha-Bayit* by R. Ovadia Yosef I:299), as well as Rif (*Shavu'ot* 2:289b), Raavad (*Issurei Bi'ah* 5:12), Ramban (*ib.* 11:13), and Rosh (*Nidda*, ch. 2, end) all agree that although the Mishna limits the uncleanness of blood to five specific colors, and although Jewish women in the days of the Talmudic sages indeed were considered clean on the basis of decisions made by competent rabbis, nonetheless rabbis today are no longer qualified "to declare any color clean if it tends to redness" unless, of course, there

The common term "color blindness" referring to this defect is neither apt nor precise

is no redness at all (*Beit Yosef, ib.*).

The decision of *Tur* and the *Shulchan Aruch* (*Y.D.* 288:1) is in accord with the three great authorities.

The earlier authorities viewed the ge'onic decree that every color tending to redness is to be considered unclean as a way to overcome common problems in examining stains. This apparently implies that the strict decree of the ge'onim would have solved the problem of the Amora'im (R. Yohanan, Ula, and Rabba) if the decree had already been adopted in their days. This is the express opinion of R. Yoel Sirkes, quoted below.

III. John Dalton's Color Blindness

"I was always of opinion, though I might not often mention it, that several colours were injudiciously named. The term pink, in reference to the flower of that name, seemed proper enough; but when the term red was substituted for pink, I thought it highly improper; it should have been blue, in my apprehension, as pink and blue appear to me very nearly allied; whilst pink and red have scarcely any relation....

I have found that persons in general distinguish six kinds of colour in the solar spectrum; namely, red orange, yellow, green, blue, and purple....

To me it is quite otherwise: --I see only two or at most three distinctions. These I should call yellow and blue; or yellow, blue, and purple...

My yellow comprehends the red, orange, yellow, and green of others; and my blue and purple coincide with theirs...

The part of the image which others call red, appears to me little more than a shade, or defect of light; after that the orange, yellow, and green seem one colour, which descends pretty uniformly from an intense to a rare yellow, making what I should call different shades of yellow. The difference between the green part and the blue part is very striking to my eye; they seem to be strongly contrasted."

Dalton's defective vision, which he described so well, is just one of many known defects in color perception. The common term "color blindness" referring to this defect is neither apt nor precise. As Dalton himself pointed out, he could definitely see at least two different colors, yellow and blue. It is clear that the term "color blindness" embodies much exaggeration and is not appropriate for Dalton's condition. Nor does the term do justice to the majority of defects in color perception. There are, however, cases of total color blindness where the whole world appears to be black and white. But total color blindness such as this is quite rare.

To understand the phenomenon of color blindness better, we must first understand normal color vision. Then we will be able to distinguish between various categories of color blindness.

IV. What is Light and What is Color?

Light is electromagnetic radiation that stimulates receptors in the retina. When light from any source strikes an object, the electromagnetic energy is absorbed by the object and some of it is reflected. The color of the light striking the eye is determined by two factors: The color of the light falling on the object and the reflection curve traveling from the object to the eye.

These two factors thus establish the color of the object. Physical differences between various objects lead to different reflected spectra. It follows that the sensation of color varies with the physical characteristics of the object.

Nonetheless, some objects possess different reflection spectra (*i.e.*, colors) that under certain sources of light create identical sensations of color even though the color appears quite different under other sources of light.

The Sages recognized this phenomenon (Tractate *Nidda* 20b) when they required examining blood stains by natural sunlight while the stain itself is located in the shade rather than in direct sunlight.

V. The Physiology of Color Vision

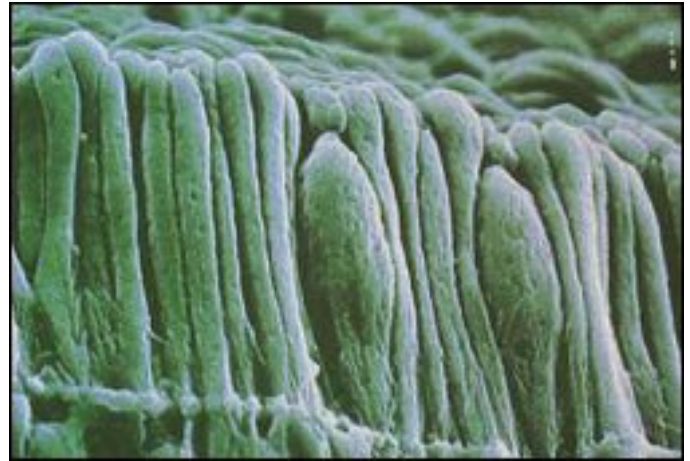
The human retina is composed of a set of receptors – light sensitive cells – of two types: rods and cones. The receptors change the picture focused on the retina into electric signals that pass through the optic nerve to the vision center in the brain. In average, there are around 120 million rods, each of which is a thin, elongated cell. These rods are more sensitive to light than the cones, but they are not sensitive to color. They are distributed throughout the retina and are therefore particularly important in darkened conditions.

Color perception is a subjective feeling caused by the relationship between the various cones in the retina and interpreted in the brain

pigment which makes them less sensitive to certain colors and more sensitive to others.

As the intensity of illumination decreases, the brain uses more information derived from the rods and less derived from the cones. It follows that the ability to distinguish colors diminishes under conditions of low illumination. In darkened conditions, vision is in effect black and white with very little capacity for distinguishing colors.

On the other hand, there are only around six million cones in the average retina. The cones are fatter cells and are less sensitive to light. They therefore need more light to create a picture, but their response varies according to the color of the light striking them. They contain



Rods and cones as scanned by an electron microscope
from EYE DESIGN BOOK Curt Deckert,

As indicated above, the retina has three types of cones. Each type has its own sensitivity curve for light with greater sensitivity for certain ranges of wavelength and less sensitivity for others. Some cones have maximum sensitivity to light of 532 nanometers (**green**). Others have maximum sensitivity at 420 nanometers (**blue**).

The third type has maximum sensitivity at 564 nanometers (**yellow**) as well as great sensitivity in the green range. In the **red** range, they have reduced sensitivity that is nonetheless greater than that of any other cones.

Although the third type of cone is essentially “greenish red,” it is convenient to label it “red.”

When the brain receives electrical signals from cones stimulated by light, we see color.

Stimulating blue cone receptors requires a higher energy level than that required by the green receptors. The “red” receptors are stimulated at an even lower energy level.

Yellow light mostly stimulates the “red” receptors. It stimulates the green receptors less and the blue receptors even less.

Red light provides reasonable stimulation to the “red” cones although the level of stimulation is far lower than that of yellow or green light. Red light stimulates the green receptors only slightly and it hardly stimulates the blue receptors.

After a spectrum of light has stimulated the three types of cone, the brain interprets the mix of

colors according to the Reilly equation that deals with signals originating from all types of receptors. For example, most people interpret absorption of red and green light at the same levels as yellow.

It follows that light entering the eye can produce a sensation of color in two distinct ways:

1. One can perceive a wave of light at a single, pure wavelength. (Such monochrome light can be produced by laser.)
2. One can perceive a mix of several colors, which the brain interprets in accord with the Reilly equation to create the sensation of a certain color. If this is the case, different people can interpret a single color differently (as we will discuss below).

In summary, color perception is a **subjective feeling** caused by the relationship between the various cones in the retina and interpreted in the brain.

*There are
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VI. Defects in Color Vision

Normal vision is the vision of the majority of the population, most of which are trichromats. Trichromacy is the most common form of color vision based on the presence in the retina of both rods and the three types of cones. This combination of receptors enables us to distinguish between thousands of colors.

On the other hand, there are four groups of defective color vision:

Group 1

Achromats have no cones at all. Their vision is based entirely on rods. This is the case of total color blindness. Achromats perceive only black and white and shades of gray. The condition is very rare. An achromat is of course excluded from any halachic discussion depending on color other than black, white, and gray.

Group 2

Monochromats possess rods and one of the three types of cone. Their vision is based on rods and a single type of color receptor. Monochromats are also almost unable to distinguish colors. Therefore, this is also a case of total color

blindness. Monochromacy is also very rare. Monochromats are of course also excluded from any halachic discussion depending on color.

Group 3

Dichromats possess rods and two of the three types of cone. Dichromats lack one type of cone and suffer from partial color blindness. There are three subgroups, depending on which type of cone is missing.

John Dalton's description (mentioned above) corresponds with this group. He seems to have had blue and green cones, but no red ones. Or perhaps he had only blue and red cones.

Dalton could therefore sharply distinguish between colors in the green and blue range where his two types of receptor were active. But he could not distinguish between red and yellow, where a single, missing cone would have been needed.

A dichromat like Dalton is clearly excluded from any halachic discussion depending on the distinction between colors in the red range, or colors tending to red and yellow.

Dichromats of the third subgroup possess both red and green cones, but lack blue cones. Such a dichromat can clearly distinguish between shades of red, yellow and green. But his ability to distinguish between shades of blue and green is defective. Such dichromacy is called tritanopia (*i.e.*, no perception of short wavelengths) and is far rarer than the first two subgroups.

Despite the ability to distinguish between shades of red, there can be differences of perception between such a dichromat and a normal trichromat in defining the presence or absence of a color "tending to redness." A person who is tritanopic however will never err in identify a fully red color. It should be observed that congenital tritanopia is very rare, and acquired tritanopia is somewhat more common. This condition occurs *inter alia* among glaucoma patients, in cases of optic neuritis, as a complication of neuropathic treatment of the optic nerve and certain other pathological conditions.

Tritanopic patients surely are defective in one type of cone. Therefore, we must consider the questions raised by Shlomy Raiskin in his article “Color Blindness in Halacha” (*ASSIA* 77-78 [5766], pp. 13-22) regarding the halachic status of apparent and hidden lesions.

Group 4

Anomalous trichromats possess *all three types of cone*. An anomalous trichromat lacks no receptors, but the equation used to interpret the signals transmitted to the brain differs from the ordinary equation (mentioned above). It is important to note that anomalous trichromats can distinguish between closely related shades of pure, laser generated light without any problem.

Similarly, it is possible to predict the mix of colors and intensity levels necessary to produce a sense of pure color according to the anomalous trichromat’s personal Reilly equation. The mix required for such a person will of course differ from the mix required for a normal trichromat. A certain mix might appear as a certain color to a normal trichromat, but will appear as a different color to an anomalous trichromat, and *mutatis mutandis*.

Physicians rely on these differences in diagnosing color blindness. They show the patient a mix of colors that a normal trichromat perceives as different from a standard color while an anomalous trichromat will perceive the same mix as identical to a standard color.

Physicians use the opposite phenomenon in diagnosing color blindness. Military intelligence has also been using it since World War II. The Allied air force utilized anomalous trichromats to help locate hidden or camouflaged military installations. Since certain mixes appear identical to normal trichromats but different to anomalous trichromats, it became clear that certain colors used for camouflage could fool the normal eye, but not the trichromat. Axis attempts at camouflage therefore failed when anomalous trichromats examined pictures of the camouflaged installations.

Anomalous trichromats, on the other hand, can indeed identify all the colors of the spectrum. Their Reilly equation is, however, different than that of other people

VII. Anomalous Trichromacy is not Color Blindness

In most population groups the majority of those who are called “color blind” or “partially color blind” are not definite dichromats. Rather, they are anomalous trichromats. Just as perfectly normal people, they interpret color by using all three types of cone and all three primary colors. However, their Reilly equation differs from that of normal trichromats.

Scientists have therefore emphasized that from a scientific point of view the term “partial color blindness” as occasionally applied to anomalous trichromats is misleading and imprecise. Anomalous trichromats suffer from no biological defect. Unlike true color blindness (dichromacy) or senile color blindness, anomalous trichromacy does not involve any somatic defect.

A truly color blind person cannot identify certain colors of the spectrum. Anomalous trichromats, on the other hand, can indeed identify **all** the colors of the spectrum. Their Reilly equation is, however, different than that of other people.

Anomalous trichromats are not all cut from the same cloth. Some of them claim that a standard mix of red and green appears as dark green, as opposed to pure, standard yellow. Others claim that it is reddish! Members of the first group, whose defect is called “protanomy” (*i.e.*, mild red-green color blindness), perceive as dim yellow mixtures of greater amounts of red and lesser amounts of green.

This means that a mixture of red and green that appears **to them** as yellow completely devoid of any red appears to **the majority of the population** as reddish because of the red component in it. Such people are more likely to be lenient in examining stains.

Members of a second group, called “deuteranomy” (*i.e.*, impaired vision in medium wavelengths), increase the green component in any mixture. This means that a mixture of green and

red (without the additional green required for producing yellow) might appear to them as tending to red while the majority of the population will see it as pure yellow without any trace of red. Such people are more likely to be strict in examining stains.

VIII. Decree of the Geonim

In light of this, it was established by the geonic period (R. Saadia Gaon) that all hues tending to redness, with a few exceptions like “white or golden green,” should be judged strictly. Following all the great medieval authorities and the three pillars of halacha, this is the decision of the *Tur* and the *Shulchan Aruch*. “And therefore every red color is unclean even if it is light, because no one knows what is the “real” red and what is light and dark.

The words of the authorities imply that the strict approach of the ancients prohibiting every color tending to redness was intended to solve our problem in examining stains. Had this approach been current in the days of R. Yohanan, Ula, Rabba and Rav Ashi, the Amora'im, it certainly would have solved their problem and enabled them to decide questions regarding the status of stains.

The position of R. Yoel Sirkes is even more explicit (*Bach* on *Tur* 183:12). In explaining the strict practice of the geonim, he wrote:

They were concerned lest they come to err in a severe matter carrying the punishment of *karet* by incorrectly designating unclean blood as clean... Therefore, they were strict and declared all red blood unclean. Even if it does not appear to us to be menstrual blood, nonetheless we are strict regarding anything that looks like blood and consider it to be menstrual. We find this in connection with R. Yohanan, Rabbi Zeira and Ula who refrained from examining stains; *they simply declared all stains to be unclean. It is obvious that they did not declare white and green stains unclean because no wisdom is required regarding*

these for everyone knows how to distinguish between red on the one hand and white and green on the other. But regarding red itself, wisdom is required [to distinguish] between unclean red and clean red.

trichromats are indeed authorized to make decisions in matters of nidda because the strict decree eliminates the absolute need to distinguish between shades of red

It is perfectly clear that according to R. Sirkes anyone who can distinguish between red and green is entitled to decide issues depending on the color of a stain even though he cannot distinguish between certain shades of red. According to him, several great Amora'im indeed made such decisions by simply taking a strict view and declaring any red hue to be unclean.

It is further clear that according to R. Sirkes, R. Yohanan, R. Zeira, and Ula did not refrain from such decisions, as the simple meaning of the Talmudic text implies. Rather, they were consistently strict regarding all hues tending to redness exactly as contemporary authorities are strict. This is so even though in the days of the Amora'im the decree of the Geonim had not yet been promulgated.

R. Sirkes's understanding is of course somewhat problematic. In the days of the Amora'im the geonic decree of strictness regarding all hues tending to redness had not yet been promulgated. It is unlikely that these Amora'im would have privately promulgated a decree like that of the geonim. If they did, who permitted them to be strict in deciding questions of *nidda* simply because their color vision was defective? Other Amora'im with normal vision were available; they could have evaluated the colors as needed and issued a correct decision.

Perhaps these Amora'im were strict in situations where no one else was available to evaluate the color. With no one else available, they of course did the best they could do. Therefore, they were forced to a strict position.

In any event, it is clear that the absolute decree declaring all stains tending to redness to be unclean covers the problem of varying degrees of color blindness. Both the “strict” anomalous

trichromats (deuteranomats) and “lenient” anomalous trichromats (protanomats) are covered, as are most normal trichromats.

If so, the halacha is free of any problem even if the rabbi deciding a question of *nidda* is an anomalous trichromat. It is precisely for such people that the geonim promulgated their decree. As a result of their decree anomalous trichromats are

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indeed authorized to make decisions in matters of *nidda* because the strict decree eliminates the need to distinguish between shades of red, which an anomalous trichromat would fail to identify “correctly”.

IX. Is Practice Required in Examining Stains?

It is amazing how little has been said about the raging controversy among recent authorities regarding a critical question in *hilchot nidda*: Is the rabbi required to undergo a period of training in the examination of stains before he can be certified?

R. Moshe Feinstein has been quoted as requiring that every rabbi be trained in the tradition of distinguishing between clean and unclean stains.

R. Shlomo Zalman Auerbach, R. Pinchas Scheinberg, and R. Y.Sh. Elyashiv, on the other hand, hold that there is no need for any special training or tradition in making these decisions.

R. Aryeh Zev Ginsberg (*Resp. Divrei Chachamim* [Hilcreast, N.Y], ch. 7, no. 54, p. 195) wrote:

The position of R. Moshe Feinstein is known. According to him no one is entitled to make decisions regarding the color of stains unless he is properly trained in the tradition.

[All] other authorities, however, hold that anyone can make such decisions.

R. Ginsberg further wrote (p. 9) that the “other authorities” include R. Chaim Pinchas Scheinberg and R. Y.Sh. Elyashiv. R. Scheinberg himself certified in his approbation to the book (page 7) that his views are correctly stated. I have personally heard that R. Y. Sh. Elyashiv said that “there is absolutely no need for any practical training or tradition in identifying colors. Rather, it is sufficient to study what the great sages and authorities have written. Therefore, the rabbi should make his decision regarding the cleanness of any stain solely on the basis of his wisdom.”

R. Sh.Z. Auerbach also said that there is no need for any formal training in examining stains and that anyone who knows the color red is qualified to decide. I personally heard this directly from his great disciple, R. Avigdor Nebenzahl on 5 Tamuz 5767 (21 June 2007).

A similar statement was made 200 years ago by R. Avraham Danzig in his halachic work *Chochmat Adam* III, 3c, and in his *Binat Adam, Beit Hanashim* 5, that every woman should be trusted on her interpretation of the color of blood stains.

R. Yisrael Mordechai Peles wrote me that the question whether a woman is qualified to decide matters of stains for herself seems to depend on this issue. According to *Tevu'ot Shor* (no. 46), one must distinguish between doubtful cases in the examination of bovine lungs on the one hand and doubtful cases in the examination of stains on the other. In issues of *nidda* one must be strict “because *nidda* is a matter which women decide.” This implies that women are entitled to examine their own stains and act in accord with their own decisions about the cleanness of the stain. This is because the examination of a stain is not an exercise of rabbinic instruction (*hora'ah*); it is merely a technical determination of the tendency of the stain to redness.

The *Sidrei Toharah* (sect. 188, end) wrote that women were never entitled to make decisions in matters of rabbinic instruction. Only qualified rabbis are entitled to make such decisions. This is apparent in *Resp. Chacham Tsvi* (sect. 46) who wrote regarding stains: “Jewish women do not

make decisions for themselves; rather, a qualified rabbi decides.” This clearly implies that the decision regarding the cleanness of a stain is a matter of rabbinic instruction and only qualified rabbis are entitled to decide.

It seems to me, however, that no definitive proof can be adduced from the *Sidrei Toharah* or the *Chacham Tsvi* that the determination of color, whether it tends to redness or not, is indeed a matter of rabbinic instruction. Perhaps these authorities agree that the determination of color is a matter of fact that anyone can establish. Nevertheless, instruction and halachic decision making on the basis of the color still may be the exclusive province of the qualified rabbi. The reason for this is that the examination of stains often involves other halachic considerations such as the distinction between stains deriving from internal examinations and those discovered externally, the status of the examination and its timing, the special requirement of *hefsek be-toharah*, distinctions between the various clean days, the woman’s status as *mesulleket damim*, etc. Similarly, it is important to know when to use a magnifying glass. Such details can impact on the halachic instruction resulting from the examination. There is therefore room to require the involvement of a qualified rabbi in the decision making process even if the basic determination of color can be made by anyone.

Therefore, even if the basic determination of the color, whether it tends to redness, is purely a matter of fact rather than a matter of rabbinic instruction, we can still understand the opinion of the *Sidrei Toharah* and the *Chacham Tsvi* who require a qualified rabbi to render the actual halachic instruction.

It is of course correct to add the opinion of the *Chochmat Adam* (sect. 111:3c) in his *Binat Adam* (*Sha’ar Beit ha-Nashim, ibid.*, sect. 2) he wrote:

“Nowadays, after the decree of the geonim, a woman who saw a stain and is in doubt whether it tends to redness is entitled to show it to another woman. If the other woman says that it does not tend to redness, she is entitled to rely on her.”

In any event, the only explanation with which I am familiar and which can explain the opinions of the great authorities who do not require training in the examination of stains is that stated above: Despite the absolute nature of the geonic decree prohibiting every color which tends to redness, the decree covers possible variations between rabbis in color perception. Every rabbi is entitled to determine whether a specific color tends to redness. The decision depends on the vision of the rabbi performing the examination. That is all there is to it.

X. Implications of Disqualifying Anomalous Trichromats

We can still understand the opinion of the Sidrei Toharah and the Chacham Tsvi who require a qualified rabbi to render the actual halachic instruction

My position is simple and straightforward. Nevertheless it is not surprising that some people would object, preferring to exclude anomalous trichromats from examining stains. It is important to remember that proposing such a strict approach would have certain ramifications that must be clearly understood. For example, every rabbi would be obligated to undergo a vision test to guarantee that he is not an anomalous trichromat as are close to 10% of all males.

The examination is simple. It is called the Ishihara test and involves identifying colored, mosaic numbers. Any qualified ophthalmologist can perform a reliable examination in a few minutes. A Nagel anomaloscope can also give precise results within a few minutes.

Every rabbi knows that one cannot rely on the majority where there is a significant minority (*mi’ut ha-matsuy*). The majority of ritual slaughterers are competent. Nonetheless, the Rosh (*Chullin* 1:5) wrote: “If he stands before us, we do not rely on the majority and his slaughtering is not permitted until he is examined.”

Rashba (*Chullin* 3, s.v. *amar*; *Torah ha-Bayit*, *Bayit* 1, *Sha'ar* 1:6; *Resp.* 1:442) explained that the idea of the geonim is normative and obligatory. This point is quoted in the *Beit Yosef* (*Hil. Shechita*, beginning) where he added: “Rif, Rambam, and Rosh all agree.” This, therefore, is the definitive halacha as recorded in the *Shulchan Aruch* (*ibid.*). See the Rema (*ibid.*) who is even stricter in requiring examination.

As far as the issue of defective color vision is concerned, it is important to establish whether a significant minority of the population suffers from anomalous trichromacy. If so, every rabbi would require a vision test in order to qualify for examining stains.

R. Sh. ha-Levi Vosner has written about this at length (*Resp. Shevet ha-Levi* 4:81):

There are proofs that the concept of significant minority does not depend on percentages. Rather, if it is the nature of the matter that the kosher majority is always accompanied by a non-kosher minority, as is the case with *treif* animals where it is a fact of nature that in any large group there will be some *treif* animals, then the minority is deemed “significant” and examination is required.

According to R. Vosner’s thinking, the minority of rabbis suffers from anomalous trichromacy should be considered a significant minority.

In *Resp. Mayyim Amukkim* (2:38) we learn that if a simple examination can establish whether a specific animal belongs to the significant minority, then such a test is mandatory. It follows that since it is quite simple to examine a patient and determine whether he belongs to the minority, every rabbi ought to be tested because there is no justification to rely on the majority when a simple test can establish the facts.

Therefore, if we do not accept the opinion of R. Sirkes and all that has been said above, every rabbi would be obligated to undergo a color blindness test before deciding issues related to the color of stains.

A further implication of those who would object is that among thousands of rabbis, it is statistically certain that hundreds who suffer from anomalous

trichromacy have never been examined. And it follows that those who object must reject any and all decisions issued by such rabbis

There is no difference between permitting the forbidden and forbidding the permitted. See in the Palestinian Talmud *Terumot* 5:3, end; *Hagiga*, ch. 1, end; *Sotah* 8:2; *Beit Yosef* Y.D. 115:3 s.v. *ve-ha-rav Perets*; Pal. Talm. A.Z. 2:9; and *Sefer Maaseh ha-Ge'onim* (ed. Epstein, Berlin, 5770, sect. 7, p. 5) by R. Natan ha-Machiri.

On the other hand, it seems that such an approach is unseemly in Judaism. As explained above, when the geonim promulgated their strict decree declaring any color that tends to redness to be unclean, they included the common variations in color perception in their prohibition. Further, the earlier authorities, especially R. Sirkes, have clearly stated that such variations in color vision were the reason for the strict geonic decree.

It follows that the earlier authorities never excluded anomalous trichromats from examining stains because there is no way that they might come to violate any law of the Torah. This is especially so in view of modern science for today we know that these variations in color perception are in no sense due to any defect in vision or true color blindness. They are not even due to any weakness of vision. It is, rather, a mere difference in the way the brain interprets the signals arriving from mixed spectra. This interpretation takes place in the eyes and in the brain, as explained above.

This is so both in the examination of stains where more lenient decisions can be expected and in cases where stricter decisions can be expected because everything depends on the vision of the rabbi who examines the stain as explained by Rashbam (*B.B.* 131a s.v. *ve-al*).

In conclusion, it is correct to mention the practical comment of R. Yisrael Mordechai Peles:

It seems that halacha is in accord with those who hold that nowadays training is not required regarding stains. Anyone who knows what “red” is

It would seem to be a good idea for all rabbis to have their color vision checked

can determine what tends to redness. Indeed, there is a practical conclusion to be drawn here. Any rabbi who is asked is entitled and even obligated to answer even if he knows that his defect in vision makes him more lenient or stricter in matters of stains. However, all this is so only in a place where there is no one else available to decide. But if there is someone else whose vision is normal, only the more lenient rabbi should be allowed to decide because just as he is allowed to decide in the absence of anyone else so he is allowed to decide in the presence of someone with normal vision. But

why should the stricter rabbi evaluate a stain if another rabbi with normal vision is available? Why prohibit a woman for no reason? If so, it would seem to be a good idea for all rabbis to have their color vision checked. If they would tend to be strict, they should try to refrain from examining stains. This will increase peace between husband and wife. May the Lord of Peace spread his tabernacle of peace over us!

International Responsa Project

Subject: Halachic sources for treating body parts

Date: January 2009

Answered by: Rabbi David I. Kaye

From which passages in the Torah and Talmud does the Jewish treatment of body parts and human tissue derive?

Can you suggest some sources or articles I could reference regarding this question?

This question has relevance to my work as a physician and surgeon and I am interested in learning how these halachot developed.

Thank you.

A small amount (size of an olive) of flesh from a deceased requires burial.

Tissue or blood removed from a live person does not. Regarding surgical removal or a limb or organ: Halacha requires burial of any organ or limb containing basar, giddim v'azamos removed at surgery or traumatically avulsed. Internal soft tissue organs such as the gallbladder, appendix, kidney, uterus, prostate, do not require burial. However, a limb does require burial.

(See Tosafos Niddah 55a; Tosafos Yom Tov Shabbos 10:5; Shulchan Aruch Y.D. 374:2; Shut. Node B'Yehuda Y.D. 1:90; Ibid. 2:209; Shut. Shevus Yaakov 2:101; Shut. Milamed L'Ho'il Y.D. 118; Shut. Chelkas

Yaakov 2:154, Ibid. 3:80; Shut. Minchas Yitzchak 4:98; Shut. Tzitz Eliezer 10:25-8; Shut. Iggeros Moshe Y.D. 231; Ibid. 2:150; Ibid. 3:141)

The halachic issues presented by post-mortem transplants are several. let's focus on some of the issues which you note in your question:

The prohibition of nivul ha-meis. The source for the prohibition for desecration (or mutilation) of the dead is from the verse in Dvarim 21:22-23, "And if a man has committed a capital offense and was executed, you shall hang him upon a tree but do not allow his body to remain on the tree all night." The Talmud (Sandredrin 47a) says that any act which can be construed as desecration of the dead is included in this prohibition.

The Talmud (Chullin 11b) offers a number of illustrations. In reference to executing a murderer, the Gemora asks: Perhaps the victim was a treifah, a person with a fatal organic disease or defect, which would make the offense unpunishable. If you should say, examine the victim's body [to ascertain whether he had a fatal disease], that would be desecrating the dead, and hence, forbidden. Should you then say that since a man's life is at stake, desecration of the dead is allowed, then one could answer that the possibility exists that the murderer struck the victim in a place where he had been suffering from a fatal wound and thus removed any trace of that wound.